DOCUMENT RESUME

ED 100 300 95 IR 001 376

TITLE	Evaluation of the Market for Instructional Television and the Effects of Changes in the Communications Industry. Current and Potential Use of ITV. Final Report. Volume 1.
INSTITUTION	Mathematica, Princeton, N.J.
SPONS AGENCY	Office of Telecommunications Policy, Washington, D.C.
PUB DATE	Dec 73
NOTE	152p.; For a related document see Volume II, IR 001 377
EDRS PRICE	MF-$0.75 HC-$7.80 PLUS POSTAGE
DESCRIPTORS	Adult Education; *Cable Television; Copyrights; Costs; Economic Factors; Educational Demand; *Educational Television; Enrollment Projections; Financial Support; *Futures (of Society); Home Instruction; Home Study; *Marketing; Media Technology; Secondary Schools; State of the Art Reviews; Supplementary Education; *Telecommunication
IDENTIFIERS	*Department of Health Education and Welfare; ITFS; MATV; Pay Television; PLATO IV; TICCIT

ABSTRACT

Assuming that new developments in communications technology will result in reduced costs for social service delivery, the Department of Health, Education and Welfare needed information about the role it could play in implementing instructional television (ITV). A study was designed to assess general educational programing costs and the potential market for ITV in the future. Although many secondary school educators have acclaimed it as a very important innovation, ITV has not received the utilization originally anticipated. This has been primarily due to limited money and staff for it within schools and among producers of ITV equipment and materials. The role of ITV in secondary schools is expected to remain limited in the near future. However, it has an important role to play in the home where real incentives exist for home purchase of video-delivered education, especially in continuing and adult education. The potential market of ITV in the home appears to be both broad and deep. Success in attempts at implementation will depend upon the extent of coordination achieved among educators in a research, advisory, and evaluative role; producers in a creative and distributive role; and institutions in an accrediting and certification role. A number of recommendations for implementation are set forth. (DC)

A1

BEST COPY AVAILABLE

MATHEMATICA INC.

SCOPE OF INTEREST NOTICE

The ERIC Facility has assigned this document for processing to: IR

C.S

In our judgement, this document is also of interest to the clearinghouses noted to the right. Indexing should reflect their special points of view.

☐ operations research and consulting services ☐ management information, planning and control systems ☐ economic and public policy studies ☐

IR001 376

002

ED 100300

EVALUATION OF THE MARKET FOR INSTRUCTIONAL TELEVISION AND THE EFFECTS OF CHANGES IN THE COMMUNICATIONS INDUSTRY

VOLUME I

CURRENT AND POTENTIAL USE OF ITV

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Final Report
Prepared for

OS/Office of Telecommunications Policy
U. S. Department of Health, Education, and Welfare
Contract No. HEW-OS-73-218

MATHEMATICA, INC.
Princeton Station Office Park
P. O. Box 2392
Princeton, New Jersey 08540

December 1973

TABLE OF CONTENTS

VOLUME I

Section	Description	Page
I	EXECUTIVE SUMMARY	1-1
1.1	Introduction	1-1
1.2	Study Objectives	1-1
1.3	The Status of ITV in Secondary Schools	1-2
1.4	Future Directions for ITV	1-2
1.5	ITV Home Use: Program Market Description	1-4
1.6	Recommendations for Implementation	1-5
1.7	Delivery Systems	1-6
II	STATEMENT OF STUDY OBJECTIVES	2-1
2.1	Definition of Problem	2-1
2.2	Purpose and Scope of Research	2-1
2.2.1	Assessment of Programming and Production	2-1
2.2.2	Model of Delivery Systems	2-2
2.2.3	User Analysis	2-2
2.2.4	Program Market Description	2-2
2.3	Educational, Technical, and Economic Scope	2-3
2.4	Definition of Methodology Employed	2-4
2.5	Scheduling of Study Objectives	2-5
2.6	Data Base Utilized	2-5
III	OVERVIEW OF STATUS OF ITV IN SECONDARY SCHOOLS	3-1
3.1	Introduction	3-1
3.2	Difficulties in Assessing ITV in Secondary Schools	3-1
3.3	User Institutions: Economic Problems	3-5
3.4	User Institutions: Existing Structure of Systems and Networks	3-8
3.5	Teachers and ITV	3-10
3.6	ITV and the Communications Industry	3-16
3.7	Software Analysis	3-17
3.8	Conclusion -- The Future of ITV in Secondary Schools	3-21

TABLE OF CONTENTS (CONT'D)

Section	Description	Page
IV	ASSESSMENT OF FUTURE DIRECTIONS FOR ITV	4-1
4.1	Identification of Factors Inhibiting ITV's Development in the Schools	4-1
4.2	Directions for Future Implementation of ITV	4-5
4.3	Operational Requirements for ITV in the Home	4-8
4.4	Potential Structure of the ITV Market in the Home	4-10
4.5	Conclusions: Schools vs. Education	4-14
V	ITV HOME USE: PROGRAM MARKET DESCRIPTION	5-1
5.1	Introduction	5-1
5.2	Market and Financial Characteristics	5-1
5.3	Potential Demand Estimates	5-5
5.4	Program Content Requirement Estimates	5-12
5.5	Interest in Credit and Location of Learning Activities	5-14
5.6	Viability of Billable ITV in the Home	5-18
VI	RECOMMENDATIONS FOR IMPLEMENTATION OF ITV	6-1
6.1	Introduction	6-1
6.2	Need Analysis	6-1
6.2.1	Research Efforts	6-2
6.2.2	Funding	6-2
6.2.3	Testing	6-5
6.2.4	Implementation of ITV Use Nationwide	6-5
6.3	Market Development Time	6-7
6.4	Possible Roles of the Government in Implementing ITV	6-8
6.4.1	Clearinghouse Function	6-8
6.4.2	Economic Support Function	6-9
6.4.3	Copyright Clarification	6-10
6.5	Redeeming the TV Set	6-11
	APPENDIX A	

TABLE OF CONTENTS (CONT'D)

Section	Description	Page
	VOLUME II	
VII	DELIVERY SYSTEMS	7-1
7.1	Introduction	7-1
7.2	General Description of Delivery Systems	7-2
	Level 1	7-11
	Level 2	7-11
	Level 3	7-12
	Level 4	7-13
7.3	Detailed Description of Distribution Systems	7-14
7.3.1	Over-the-Air Broadcasting	7-16
7.3.1.1	VHF/UHF Broadcast TV	7-17
7.3.1.2	ITFS Instructional Television	7-23
7.3.2	CATV Distribution Systems	7-26
7.3.2.1	Basic CATV System Description	7-35
7.3.2.2	Two-Way Interactive Systems	7-45
7.3.2.2.1	Subscriber Response System (SRS)	7-51
7.3.2.2.2	TICCIT -- Interactive TV System	7-56
7.3.2.2.3	The Rediffusion CATV HF Distribution System	7-64
7.3.2.2.4	Computer Television Inc.	7-67
7.3.3	Special Distribution Systems	7-70
7.3.3.1	CCTV	7-70
7.3.3.2	Master Antenna TV Systems	7-70
7.3.3.3	Pay TV	7-71
7.3.3.3.1	Over-the-Air Pay TV	7-71
7.3.3.3.2	Cablecasting	7-76
7.3.4	Microwave	7-79
7.3.5	Satellite Systems	7-84
7.3.6	Home Delivery Systems - Video Tapes and Video Disc	7-93
7.3.6.1	Video Tape	7-93
7.3.6.2	Video Disc	7-94
7.3.7	PLATO (Programmed Logic for Automatic Teaching Operations)	7-96

006

TABLE OF CONTENTS (CONT'D)

Section	Description	Page
7.3.8	Advanced Broadband Information System	7-99
7.3.8.1	Delivery System Model	7-99
7.3.8.2	Delivery System Elements	7-103
7.4	Individual System Costs	7-130
7.4.1	CATV	7-131
7.4.2	Pay TV	7-134
7.4.3	CCTV	7-140
7.4.4	Video Disc	7-140
7.4.5	Video Tape	7-142
7.4.6	UHF Broadcast Station	7-144
7.4.7	ITFS	7-144
7.4.8	Microwave Short Haul Systems	7-149
7.4.9	Satellite System	7-152
7.4.10	TICCIT	7-154
7.4.11	PLATO	7-154
7.5	Cost Relationship Models	7-157
7.6	Decision Analysis Tools	7-160
7.6.1	Examples	7-178
	Example 1	7-178
	Example 2	7-181
	Example 3	7-185
	Example 4	7-189
7.6.2	Summary	7-193

APPENDIX B

BIBLIOGRAPHY

LIST OF TABLES

VOLUME I

No.	Description	Page
3-1	Patterns of Financial Support for ITV	3-7
3-2	New Media Devices	3-8
3-3	Audiovisual Equipment and Material Inventory of 3,142 School Buildings	3-11
3-4	Broadcast Hours of Public Television Stations	3-12
3-5	Perceptions of Restriction of ITV Service	3-14
3-6	Indicators of the Educational Market for 16 mm Films, Sound Filmstrips, and Multimedia Kits	3-18
3-7	Sales of Educational Media Materials, by Subject Areas	3-20
3-8	Relative Importance of Uses of ITV	3-23
3-9	Actual Use of ITV	3-23
5-1	Estimated Retention Rates	5-6
5-2	Instructional Sources Utilized for Adult Education	5-10
5-3	Students in Adult Basic Education	5-11
5-4	Content of Learning Interests	5-15
5-5	Percent of Adults Studying Various Topics	5-16
5-6	Credit Received by Participation in Field of Learning	5-17
5-7	Student Body and New Enrollments Home Study Education	5-20

VOLUME II

No.	Description	Page
7-1	Sources/ITV Interface Guide	7-4
7-2	Quick Look Assessment Chart	7-6
7-3	Numerical Designation of Television Channels	7-18
7-4	Frequency Assignments of Instructional Television Fixed Stations	7-24
7-5	Growth of CATV Industry	7-30
7-6	U. S. Cable Systems with more than 19,000 Subscribers	7-31
7-7	CATV Systems	7-32
7-8	CATV Channel Assignments	7-41
7-9	Summary of Two-Way Cable Systems and Demonstration Projects	7-47

LIST OF TABLES (CONT'D)

No.	Description	Page
7-10	Working Allocation Plan for VHF Cables	7-48
7-11	Satellite Proposers	7-86
7-12	Broadband Information	7-104
7-13	Headend Costs	7-135
7-14	Local Origination Studio	7-136
7-15	Home Costs (Fixed Cost)	7-137
7-16	Cable Transmission Unit Costs	7-138
7-17	Pay TV Costs	7-139
7-18	CCTV Costs (Secondary School)	7-141
7-19	Video Disc Costs	7-143
7-20	Video Tape System Cost	7-145
7-21	UHF Station Costs Including Transmitter, Tower and Antenna	7-146
7-22	Other UHF Broadcast Station Cost (Fixed Costs)	7-147
7-23	UHF Broadcast Station Annual Operational Costs (Fixed Costs)	7-147
7-24	UHF Broadcast Studio Costs	7-148
7-25	ITFS Costs	7-150
7-26	Laser Link Microwave Equipment Cost	7-151
7-27	TICCIT Costs	7-155
7-28	Operational Cost of the Plato IV System	7-156
7-29	ITV System Evaluation Criteria Matrix	7-166

LIST OF FIGURES

No. Description Page

VOLUME I

3-1 Salaries, Current Expense Per Pupil, and Inflation 1960-1970 3-9
5-1 Percent Who Would Subscribe to Proposed Services 5-3
5-2 Willingness to Pay for Education and Library Services 5-4
5-3 Relationship of Expected Final Penetration to Monthly Subscriber Fee for Two Combinations of Services of Urban Cable Systems 5-7
6-1 5 - Year Need Analysis 6-3
6-2 ITV 5-Year Need Analysis 6-4

VOLUME II

7-1 Overall Schematic Model of System 7-7
7-2 Educational and Other Services 7-8
7-3 Delivery System Block Diagram 7-9
7-4 ITV Activity Levels 7-10
7-5 Simplified CATV System 7-27
7-6 Market Size 2-Way Home Terminal 7-28
7-7 Master/2 Slave Headends CATV Network Interconnection 7-37
7-8 Typical Minimum CATV Local Origination Studio 7-38
7-9 Single Cable - 2-Way 7-42
7-10 2-Way, Dual Cables With A-B Switch 7-44
7-11 Switched Distribution System 7-46
7-12 SRS System 7-52
7-13 Typical SRS Communications Sequence 7-54
7-14 Computer Keyboards For Communication From Home to the Computer 7-57
7-15 TICCIT Computer Subsystem 7-63
7-16 Simplified Block Diagram 7-65
7-17 CTI System 7-69
7-18 UHF TV -- Frame Grabber Channel System 7-74
7-19 Cable Spectrum (MHz) 7-77
7-20 System Block Diagram Telebeam 7-80
7-21 Microwave Interconnects For a CATV System 7-82

LIST OF FIGURES (CONT'D)

No.	Description	Page
7-22	ITV Satellite Communications System	7-90
7-23	System Timing	7-101
7-24	Broadband Information System	7-129
7-25	CATV/Pay TV Cost Structure	7-133
7-26	Ground Station Costs and System Noise Temperature	7-153
7-27	CATV Costs per Channel Hour	7-179
7-28	Cost per Channel Hour per CATV Subscriber	7-180
7-29	Cost/Channel Hour for Added Tape Programmed Channel	7-181
7-30	Cost (Mils) per Channel Hour/Subscriber For an Added Channel, With all Tape Programming, to an Existing CATV System	7-183
7-31	Cost (Mils) per Channel Hour/Subscriber For an added Channel, With all Tape Programming, to an Existing Pay TV System	7-184
7-32	Video Disc - Cost ($) per Channel Hour per Subscriber	7-187
7-33	Total Cost per Channel 1/2 Hour for Video Disc	7-188
7-34	Cost per Channel Hour For an OTA UHF Channel	7-190
7-35	Cost per Channel Hour per Subscriber	7-191
7-36	Summary of Cost ($) per Channel Hour	7-195
7-37	Summary of Cost/Channel Hour/Subscriber	7-196
7-38	Total Costs for Adding OTA Channel to CATV System (Example 1)	7-197
7-39	Total Costs for CATV or Pay TV, Added Channel Plus Pay TV Revenue, (Example 2)	7-198
7-40	Total Cost and Revenue For 1/2 Hour Video Discs (Example 3)	7-199
7-41	30 Mile Radius OTA UHF ITV Station (Example 4)	7-200

SECTION I

EXECUTIVE SUMMARY

1.1 Introduction

This executive summary provides an overview of MATHEMATICA's report on an Evaluation of the Market for Instructional Television Programs and the Effects of Changes in the Communications Industry. Though ITV has been available in fractured form for many years, it has not had the impact on education that many people claimed it would have. Many factors - technical, economic, and social - have prevented ITV from achieving its potential role in education, and this report will not only identify these factors but also discuss ways in which ITV's capabilities can be more fully exploited.

1.2 Study Objectives

The function of this report, which assumes that new developments in communications technology will result in reduced costs for social service delivery, is to provide HEW with information about the role it could play in implementing ITV. The study was originally designed to evaluate the market for instructional television in secondary schools, but was broadened to assess general educational programming costs. The primary intention is to gather and present costs for total systems, including both hardware and software considerations. In addition to helping HEW's Office of Telecommunications Policy with decision making, the information could be used to provide data for presentation to various other groups in support of policy decisions.

Aside from presenting and summarizing cost information and analyses, an attempt has been made to assess the market for televised instruction, keeping in mind developments and changes in communications technology. To this end, the scope of the user analysis and program market description has been expanded to include not only applications of ITV in secondary school vocational education, but also the additional use of ITV in other subject areas in secondary schools as well as its use outside the formal education system.

1.3 The Status of ITV in Secondary Schools

Instructional television has definitely altered the landscape of secondary education. Introduced to secondary schools approximately fifteen years ago, it has been acclaimed by many educators as a magnificent innovation of great importance, and it clearly has revolutionized education in several school systems across the United States. Yet, television is generally playing a trivial role in school instruction. In the nation as a whole, it probably occupies only a few of the 1,000 or so school instruction hours which every child is given each year. And some school systems, after committing a great deal of money towards implementing ITV in their schools, have decided to cut back on their support for the program. Why has a technological innovation widely regarded as beneficial to education not been a great success?

The major constraints to successful use of ITV in schools can be summed up in two words: money and staff. These two factors generate multiple problems, among them lack of provision for the maintenance of a professional technical staff and inadequate teacher training in use of ITV (which is an ideal means of overcoming teacher resistance). Limited school budgets for rental or purchase of software keep the market for educational media products small. This creates a vicious circle of inadequate incentive for production and, consequently, for use. Frequently heard complaints from educators concern program quality, availability, and cost, as well as scheduling difficulties. Producers cite preview and distribution costs in addition to copyright infringements as drains on their potential revenue from the educational market.

1.4 Future Directions for ITV

We believe that the role of ITV in secondary schools will remain a limited one in the near future. However, the factors that inhibit ITV's full development within school systems do not necessarily prevail in other areas, and we think that ITV does have an important role to play in education - in the home rather than in the schools. Widespread acceptance of ITV in the home should so stimulate production of instructional software that many of the cost and availability problems now experienced in schools will be significantly alleviated.

There are several advantages to home ITV. The necessary hardware exists in most homes, having been purchased for entertainment. Other accessories useful for ITV delivery will also be available on the consumer market as a means for receiving additional forms of entertainment. In addition, home ITV creates the possibility of billing individual viewers for use of educational software, thus generating greater returns to producers and providing incentives for increased production.

Distribution system operators in the CATV and Pay TV fields with whom we spoke indicated a strong interest in educational programming. Because operators are responsible for providing programming which will make their particular systems attractive to an audience, they are always interested in new sources of software, and several stated that they would be pleased to provide educational programming as long as their subscribers pay for it, just as they pay for entertainment programs.

We believe that there are real incentives for home purchase of video-delivered education. Already there exists a substantial market for adult or continuing education, and home ITV can offer instruction in these areas. In addition, ITV can provide a means for "horizontal" learning, which may be a convenient way to reduce the time and costs of professional or career training. For instance, a student desiring to become a patent lawyer might enroll in law school and learn engineering at home with ITV, thus decreasing formal training time from five or six years to two or three years. Endorsement and/or participation in ITV programming by prominent educators, professionals, business leaders, and public personalities would be an effective means of generating confidence in the programs and increasing the motivation to use them.

014

If instructional video programming is to be received and paid for by home users, it must be comparable in cost to other available modes of self-instruction, such as books, language records, or correspondence courses. Furthermore, the home user must have easy access to ITV programming at a time convenient to him. ITV, of course, cannot have the portability of books, but it must have similar flexibility of use.

We believe that ITV in the home will tap a sizable market for extended learning, a market that includes all those persons who have not received high school diplomas, or even college diplomas, as well as all those who want to acquire new job skills. This market is composed of people who, for a variety of reasons, cannot get to a school; it includes the chronically ill, the handicapped, the aged, prisoners, members of the armed forces, and persons living in remote areas. It includes all those people who, owing to the nature of their jobs or family responsibilities, find it difficult or impossible to take courses in a school.

1.5 ITV Home Use: Program Market Description

Since there are only limited examples of ITV currently in use for home or individualized instruction, it is clearly not possible to extrapolate future market demand from current market demand. There are, of course, programs associated with open university courses which utilize video materials. There are also television-based courses of instruction transmitted by broadcast television. Nonetheless, we feel that current subscription to these programs is a poor indicator of what the demand would be if ITV programs on a wide range of subjects were easily accessible to the consumer.

Thus, we present an indication of potential future demand based on the interest expressed in out-of-school instruction and on current demand for all types of out-of-school instruction, not limited to such instruction already utilizing video materials. We do not mean to imply that all persons currently involved in home study or adult education would prefer ITV media, but we do mean to indicate that the potential market is not limited to those already committed to video instruction.

An estimated 77% of the American general public indicates an interest in some form of further learning. In a California-based study of the market for various services which could be delivered on CATV, 44% of the respondents reported an interest in receiving education and library services.

Our study looked closely at statistics about participation in adult education programs, since we wanted to determine the demand for video delivery of programs designed for use outside of full-time school attendance and for which the user will pay a fee. In 1969 it was estimated that more than 13 million adults were enrolled in some form of adult education, but other data information suggests that this figure is extremely conservative.

Perhaps a better indication of minimum demand to be expected for home study courses using video delivery systems is the current demand for home study courses based on written materials, i.e., correspondence courses. The National Home Study Council estimated in 1970 that approximately five million adults were enrolled in some form of correspondence study.

Looking at the demand for supplemental education manifest in enrollment in correspondence school courses and other adult education classes, we found that the areas of career and vocational education seem to offer the greatest market potential for ITV.

1.6 Recommendations for Implementation

We feel that widespread use of ITV can be accomplished in the near future if a developmental program is designed and executed right away. Any such plan should progress through four major areas: research, funding, testing, and actual implementation.

Initial research efforts will serve to define the first areas of policy action. At the same time that technology assessments are made and market and content research conducted, copyright legislation should be examined and policy recommendations made so that nationwide distribution and use of programs can be accomplished without the removal of producers' rights.

Financial incentives in one form or another should be provided to hardware manufacturers and software producers for research and development in ITV applications. Experimental ITV test programs should be conducted both for home use and for use in secondary schools. Economic analysis of the test programs should establish the most viable areas for further production ventures as well as the most efficient methods of distribution.

Success in attempts at implementation will depend to a large extent on the coordination achieved between educators, in a research, advisory, and evaluative role; producers, in a creative and distributive role; and institutions, in an accrediting and certification role.

1.7 Delivery Systems

Any evaluation of the market for ITV must include a detailed description of delivery systems so that system cost-comparisons can be meaningfully structured. What must be kept in mind, however, in making comparisons between different systems, is that while costs for the procurement and the distribution of program materials or services may be computed, the means of obtaining the revenue to support the distribution process often varies considerably.

In any delivery system there are three main components:

- a means of viewing
- a means of distribution
- a variety of sources of information.

It is obvious that this study is based on the presentation of visual information by television. This means of viewing modified with specific control mechanisms must fulfill certain functions if it is going to be marketable. That is, we must think in terms of demand programming - the ability to get the desired information to the consumer when he wants it.

A distribution system, whether very simple or complex, is basically a way of conveying the information from the source to the users. The distribution system must also fulfill certain economic functions, an important one being the provision of revenue. In order to maximize the market for program producers, a distribution system must be able to disseminate educational software on nationwide, regional, and local levels. Whatever the distribution system the consumer has access to, each requires that there be inexpensive equipment in the user's facility, whether it is the home or the school, and that inexpensive programs be available at a central information bank. Any distribution system should be capable of utilizing the many sources of information available.

There are various distribution systems that can be used for conveying instructional television information to the public. They include:

- Over-the-air Broadcasting
- CATV Distribution Systems
- Special Distribution Systems
- Microwave Systems
- Satellite Systems
- Home Delivery Systems
- PLATO (Computer-Assisted-Instruction)
- Advanced Broadband Information Systems.

It should be recognized that the systems which are already in existence, such as over-the-air and CATV, could be maximized and optimized for instructional TV if program material were available and put into automatic systems that require a minimum of personnel participation and studio equipment.

Obviously some systems would be more effective than others in providing several unique functional contributions, such as:

- selective choice
- continuous and single frame video
- paid education
- world wide networking
- option to use later
- established mass distribution channels
- large channel capacity
- cost sharing.

In discussing the costs of implementing a delivery system it is necessary to keep in mind not only the fixed and variable costs, but also the size and capability required of the system. In addition, the particular functional capabilities of various systems have to be weighed. Our study provides an ITV System Evaluation Criteria Matrix in which we assess the way different systems meet several different criteria. For example, cable systems have, by nature, finite numbers of subscribers, and in addition the cost per subscriber is generally fixed (i.e., it does not go down when new subscribers are added or as additional programs are sold), whereas video discs and cassettes are priced according to market size and have an unlimited audience. Therefore, in devising future system configurations considerable effort must be expended in weighing and selecting factors with regard to the commitment of the investment required.

SECTION II

STATEMENT OF STUDY OBJECTIVES

2.1 Definition of Problem

On the hypothesis that new developments in communications technology will be able to reduce costs of social service delivery, this research effort is to provide HEW with information upon which to make policy and budget decisions on its role in delivering services by various communications systems. The study was originally designed to evaluate the market for instructional television in secondary schools, but was broadened to assess general educational programming costs. The primary intention is to gather and present costs for total systems, including both hardware and software considerations. In addition to helping HEW's Office of Telecommunications Policy with decision-making, the information will be used to provide data for presentation to various other groups in support of policy decisions.

2.2 Purpose and Scope of Research

Over and beyond the summation and presentation of cost information and analyses, an attempt has been made to assess the market for televised instruction, keeping in mind developments and changes in communications technology. To this end, the scope of the user analysis and program market description has been expanded to include not only applications of ITV in secondary school vocational education, but additional use of ITV in other subject areas in secondary schools as well as its use outside the formal education system.

Following is a grouping and description of the four basic areas of research effort.

2.2.1 Assessment of Programming and Production

An assessment is made of ITV programs available from both public and private sources. The term "availability" is used in a broad sense to include, in addition to a representative catalogue search, consideration of methods of distribution and financial arrangements for use. Analysis of subject areas in which programs are offered is supplied.

In addition, general costs of production, reproduction, and distribution of ITV programs are given as parameters of the market relationship between the producer and the educational community. Sources and potential volume of new program production are considered in light of current and projected market demand and production and distribution costs.

2.2.2 Model of Delivery Systems

Descriptions are given of delivery systems that are currently being implemented, as well as of newer technological developments that are yet to be found in widespread use, or available for use at all. These system descriptions are structured in terms of the general functions which are common to all delivery systems, and in terms of system and component costs. A model to compute costs of various configurations of technological delivery systems is presented, and particular emphasis is given to direct comparisons of costs of alternate systems.

2.2.3 User Analysis

Experiences of use of television for education and instruction are studied so that factors most likely to contribute to the successful implementation of ITV may be identified. Decision-making structures and resource availability play important roles, especially within the secondary school context; other influential factors might include costs comparisons, schedule flexibility, program quality, faculty and administrative acceptance, and the ability to support a professional technical staff. The user analysis is not limited exclusively to secondary school use; use of ITV outside the formal school system is also considered.

2.2.4 Program Market Description

Essentially, this area is an assessment of the economic viability of producing and distributing ITV programming in various areas. In making this assessment, account is taken of projected developments in communications technology as well as potential demand for instructional programming. The viability of programming for ITV markets is discussed in terms of the immediate or continuing Federal support required for the stimulation or maintenance of such projects.

2.3 Educational, Technical, and Economic Scope

In response to the purpose and scope of this project, the research effort has been concentrated in the four major task areas outlined above. Budget and time constraints precluded an exhaustive survey approach; instead, use has been made of existing data from previous studies, and a limited number of in-depth interviews were conducted with representatives of both producer and user concerns.

The conclusions set forth in the educational and economic areas are based to a large degree on the series of interviews conducted with individuals who are, in various ways, interested in developments in the field of instructional television, whether from a standpoint of commercial production, education, or experience in a range of video applications.

The group of producers interviewed includes representatives of major companies in the CATV, Pay TV, and audio-visual fields. This group was able to describe the development and marketing of delivery systems as well as to explain the economic factors affecting the development of markets for hardware and software. Information gathered from producers and potential producers on costs for production of program material and the financial structures used by producers to evaluate the choice of program markets was of particular help in defining sources of new program production.

In order to obtain an indication of current implementation of video technologies in secondary schools, interviews were conducted with faculty, administrators, and ITV directors in several high schools. Many of these schools may be characterized as innovative and progressive, especially in their attempts to make use of technology. An attempt is made to evaluate the strengths and weaknesses of ITV in school systems that exhibit an active commitment to innovation as well as in school systems that maintain a more tentative or even negative stance toward ITV.

In addition to the interviews, the MATHEMATICA corporate data base was updated with communications technology literature and existing research data obtained from previous studies.

The technical description of delivery systems presents detailed information on the capabilities of ten alternate delivery systems: cable television (CATV), closed circuit television (CCTV), Pay TV, video disc, videotape, UHF broadcast, microwave systems, satellite systems, TICCIT and PLATO systems (Computer-Assisted Instruction), and information storage and retrieval. The component and system capabilities of each system are presented separately; this information is followed by comparisons of the attributes of the different systems. Previous research and manufacturer studies were utilized as sources of data for this task.

2.4 Definition of Methodology Employed

In updating MATHEMATICA's data base in communications, search was made of recent state-of-the-art communications technology literature and trade journals. These sources, and selected data collected by the Federal Government and other research groups, were documented in the form of a project library.

The producers interviewed included representatives of companies such as RCA, TelePrompTer, Athena Communications, McGraw-Hill, and Time-Life Video; for the most part these individuals were based in the New York metropolitan area. An effort was made to include producers of both hardware and software.

Users interviewed personally included individuals in several school districts in New Jersey and Pennsylvania. Some of these schools are relatively well-known for their experiments with television; others were suggested to MATHEMATICA by a media specialist at the Educational Improvement Center in Glassboro, New Jersey. In addition, a limited number of self-administered questionnaires were mailed to faculty, administrators, and ITV directors in selected schools in Minnesota, Colorado, Hawaii and Illinois. These schools are clients of MATHEMATICA's subsidiary, Educational Coordinates, Inc., and are numbered among the more innovative schools in the United States.

A summary and tabulation of the interviews appears in Appendix A. The respondents do not comprise a scientifically representative sample; a survey of that nature was beyond the scope of this study. In this case, an effort was made to select respondents who would be able to contribute a great deal of information.

2.5 Scheduling of Study Objectives

In the first period of research activity, the data search was initiated, topic guides for the in-depth interviews with producers and users were prepared and finalized, and preliminary conceptualizations of cost models were drafted.

The second phase's activities centered on continuation of the data search, completion of interviews with producers and users, consultation with experts in the field of video production for education, and descriptions of delivery systems, including further development of cost estimation relationship models.

The third and final phase of research activity included preparation and submission of an Executive Summary of the final report and an Interim Report on research progress and findings. Data acquisition was finalized, and refinements were made in the presentation of information. This final report attempts to supply quantities of information in a convenient form to enable HEW-OS to make budget and policy decisions on HEW's role in delivering services -- in this case, education -- by various communications technologies.

2.6 Data Base Utilized

For a complete listing of resource and reference materials, see the Bibliography which follows the Appendix to Volume II.

SECTION III

OVERVIEW OF STATUS OF ITV IN SECONDARY SCHOOLS

3.1 Introduction

Instructional television has definitely altered the landscape of secondary education. Introduced to secondary schools approximately fifteen years ago, it has been acclaimed by many educators as a magnificent innovation of great importance, and it clearly has revolutionized education in several school systems across the United States. In 1970 the National Center for Educational Statistics of the U. S. Office of Education conducted a survey which reported that the median number of TV sets per school was 2.8. Based on that finding, there would be at least 170,000 television receivers owned by public schools. Yet, according to Barnett and Denzau (1971), in the United States television is generally playing a trivial role in school instruction. In the nation as a whole, it probably occupies only a few of the 1,000 or so school instruction hours which every child is given each year. And some school systems, after committing a great deal of money towards implementing ITV in their schools, have decided to cut back on their support for the program. Why has a technological innovation widely regarded as beneficial to education not been a great success? In order to answer this question we have to carefully sift the evidence from surveys of schools that have made use of ITV.

3.2 Difficulties in Assessing ITV in Secondary Schools

For several reasons it is difficult to generalize about the effectiveness of ITV in secondary schools. For one thing, we do not have enough evidence -- that is, very few schools have relied heavily on instructional television in teaching students. However, we do have data from several schools that have developed elaborate ITV systems, and the reports from these school systems are generally positive about the effectiveness of ITV. For example, a report (1971) about Anaheim, California, which instituted an instructional television system about fourteen years ago, claims that "the groups receiving instruction by means of related classroom and televised teaching were *found to be consistently superior* to the conventionally taught groups." The report also says that ITV in Anaheim has led to

- greater instructional flexibility and innovation;
- reduction of the teacher's total work and planning load;
- more careful planning of curricula for day-to-day instruction; and
- better student retention of subjects taught via television.

More important, perhaps, than the above claims was the claim that ITV has proved cost-effective. Savings due to increased efficiency in the use of personnel and resources under Anaheim's ITV system are estimated at approximately $152,000 per year. It was estimated that the Anaheim district's investment in its instructional television system would liquidate itself in about seven years. Hagerstown, Maryland, which has an instructional television system deployed over a county-wide cable network of 46 schools, also claims that ITV is cost-effective, saying that ITV has enabled them to reduce the educational cost per pupil. (In 1969-1970, Washington County, Maryland's educational cost per pupil was $772.51 compared with a statewide figure of $816.30, a reduction attributed by Hagerstown School administrators to the television system.) Other ITV systems instituted in Oklahoma City and American Samoa make similar claims.

It is risky, however, to extrapolate from these well-known and successful experiments with ITV in secondary schools and say that these experiments conclusively prove that ITV in the schools would always be cost-effective and would always result in superior instruction. Naturally educators in favor of expanding ITV facilities in secondary schools dwell on these successes, but there have also been some notable failures with ITV in secondary schools. For example, in 1970, St. Louis allocated only $150,000 of its total budget to the local ETV station for television programs for schools, and only a miniscule portion of its budget for television receivers and maintenance. A survey revealed that programs were not being used, owing to scheduling difficulties, program quality, lack of previews, and inadequacy in the number of sets. The city has now eliminated most of its support payment. There have been similar retrenchments in the TV operations of other school systems, including Miami, Philadelphia, Los Angeles, and Rochester.

What are we to make of these differing results with ITV in secondary schools? Should we assume that the Anaheim and Hagerstown ITV programs are model ones to be followed by other school systems, dismissing the failure of certain ITV programs as the result of poor planning or poor training of teachers? Obviously there are many complex factors affecting a particular school system's results with ITV, among them the background and interests of the students, the quality of the teachers, even the composition of the local school board. Therefore it is impossible for one school system to exactly follow what another school system has done and come out with similar results. Most of the studies of the educational applications of media have examined the use of these media in schools, and in so doing they have mixed the educational applications of media with the particular institutional problems of the schools. This mixture has serious implications for a study of the extent to which media may be used for educational purposes.

A study done by the Ford Foundation (1973) suggests that the following criteria must be met to ensure the successful implementation of a technological instruction program in the schools:

- a recognized and generally agreed upon need exists;
- a desire to meet the need and to do it through the use of instructional technology prevails;
- leadership is exerted at the right level of authority, responsibility, and control;

- teachers participate in and support the project;
- some substance -- or content -- requires the use of technology;
- a mechanism for measurement and evaluation is included;
- adequate financial resources are provided for the duration of the program.

But it is often very difficult to isolate all of these factors in any given school system, particularly when decisions for implementation of ITV are made at the district level. The fact remains that a supposedly great innovation for school instruction is not at present widely used in secondary schools, despite the success with ITV in such places as Anaheim and Hagerstown. We can say that ITV has been effective at some schools and therefore has a good chance of being effective at school systems that are similar to the ones in Anaheim and Hagerstown. We cannot say conclusively at this point, however, that ITV implemented on a larger scale would necessarily be cost-effective and provide superior instruction in most schools in the United States.

Not only is it difficult to isolate the factors that made the implementation of ITV at Anaheim and Hagerstown a success, but it is also difficult to say exactly what constitutes superior instruction by ITV. Are student's accelerated learning rates, so often cited by instructional television specialists, merely the result of the medium's newness -- the often-mentioned "Hawthorne Effect"? The detailed studies of Chu and Schramm (1967) have shown that under carefully controlled conditions instruction by means of electronic media and instruction by traditional methods yield no differences in learning. This conclusion does not support Anaheim's claim that ITV results in superior instruction, but it does indicate that ITV can safely be used to relieve the teacher of some of the more routine instructional tasks, giving her or him more time to work with students on an individual basis.

There are several other obstacles that we face when trying to measure the effectiveness of ITV in secondary schools. At present education is not organized or even seriously considered as a business-type activity, and educators - even the most budget-conscious ones - are averse to considering teachers as production-line workers or students as products. Although there has been a general movement towards accountability in education, most teachers and educators, particularly those teachers in the liberal arts, resent such an approach, thinking that such evaluations never take into account the intangible factors that make for good teaching. Furthermore, studies that focus on such tangible results as achievement on standardized tests may overlook the possibility that teacher activity has little bearing on the student's achievement. There is a strong possibility that what is actually being evaluated when teachers and television are being compared is the contribution of the teaching medium over and above a common "textbook." If so, the contribution of the video medium is useful when it provides a cost-effective means of relieving teachers of some of their routine or repetitive tasks.

Reliable studies, then, of the effectiveness of ITV in the schools are extremely hard, if not impossible, to do. And, according to the authors of The New Instructional Technologies -- Are They Worth It? (1971), they haven't been done: "As far as this study could determine, there are no 'model' schools that combine a wide range of instructional media with cost-effectiveness study." From the evidence we have seen, we can say that it is difficult to predict whether ITV would be successful if it were implemented on a large scale in most secondary schools throughout the country. But as our survey of users will show, the very question of whether a vast expansion of ITV in secondary schools would be effective may be supererogatory. For unless a great deal of money is forthcoming from the Federal government, budgetary restrictions will prevent this expansion from taking place.

3.3 User Institutions: Economic Problems

According to a composite profile of ITV in secondary schools and universities made in October, 1972, more educators reported that their budgets for ITV have remained the same or slightly increased over the past three years and will continue in the same pattern than reported actual and anticipated reductions or substantial increases.

(These percentages are shown in Table 3-1.) Interpreting this table, the compilers of this profile say the following: "In an economic situation where many budgets have been pruned back in the last several years, it was interesting to find that in the area of instructional television the financial and classroom support had actually increased over the past three years. It is also interesting to note that some growth is anticipated over the next three years." But we wonder whether enthusiasts of ITV in the classroom can be heartened by this table, for the table clearly shows that there is no groundswell of support for large investments in ITV. In fact, there is no significant difference between the number of schools expanding their support for ITV and the number of schools drastically cutting back their support.

The reports from the particular schools we surveyed across the country were less sanguine than the composite profile about the possibility that money would be available for expanding current ITV facilities. In order to get an indication of the current implementation of ITV in secondary schools, personal interviews were conducted with faculty, administrators, and media specialists in several high schools in New Jersey and Pennsylvania. In addition, a limited number of questionnaires were mailed to corresponding personnel in selected schools in Minnesota, Colorado, Hawaii, and Illinois. Most of these schools, particularly those to which questionnaires were mailed, can be characterized as innovative and progressive in their attitude towards making use of technology in the classroom.

The schools we surveyed were in various locations throughout the United States and differed widely in the size of their enrollments and their per-pupil expenditure on audio-visual materials, but, with the exception of those schools planning to construct studio facilities, which constitutes a one-time, start-up expense, educators at these schools stressed that it would be very difficult for them to significantly expand ITV in their schools without the investment of large sums of money by the Federal government. Every educator interviewed - even those at the most innovative schools - complained about the lack of money available both for hardware and soft ware and for the support

TABLE 3-1

PATTERNS OF FINANCIAL SUPPORT FOR ITV IN SECONDARY SCHOOLS AND UNIVERSITIES

	TOTAL	BDCST	SCHOOL CCTV	UNIV CCTV	ITFS	CATV
	336	91	68	144	42	9
Drastic reduction in the amount budgeted for ITV	17.6%	12.1%	19.1%	20.1%	16.7%	11.1%
Slightly less budgeted now for ITV than 3 years ago	13.1%	11.0%	16.2%	9.7%	21.4%	0
About the same amount budgeted now as was budgeted 3 years ago	25.6%	19.8%	30.9%	27.1%	23.8%	22.2%
Slightly more budgeted now for ITV than 3 years ago	29.1%	29.7%	19.1%	25.0%	19.0%	33.3%
Substantially more budgeted now for ITV than 3 years ago	19.6%	27.5%	14.7%	18.1%	19.0%	33.3%

I. Financial Support for ITV Service in 1969-1972

	TOTAL	BDCST	SCHOOL CCTV	UNIV CCTV	ITFS	CATV
	339	90	69	147	43	10
Drastic reduction of present amount will then be budgeted for ITV	8.3%	8.9%	8.7%	8.8%	2.3%	0
Slightly less will be budgeted for ITV in 3 years	11.8%	4.4%	17.4%	10.9%	20.9%	10.0%
About the same amount will be budgeted in 3 years as is budgeted now	29.2%	31.1%	30.4%	27.9%	23.3%	10.0%
Slightly more will be budgeted in 3 years than is now	36.0%	36.7%	34.8%	37.4%	39.5%	70.0%
Substantially more will be budgeted in 3 years for ITV than is now	14.7%	18.9%	8.7%	15.0%	14.0%	10.0%

II. Anticipated Financial Support for ITV in 1972-1975

(Source: **Cavert**, Dr. C. Edward, A Composite Profile: Instructional Television Service in the United States (October, 1972). A report of the National Programming Service Survey of Instructional Television, conducted for Great Plains National Instructional Television Library, Lincoln, Nebraska.) (N.B. - not copyrighted) of a professional staff to provide and maintain media services and to train teachers in making better use of ITV in their courses.

As Figure 3-1 shows, the cost of operating schools is rising dramatically, and it will probably continue to rise. Audio-visual budgets are usually the first casualty of such rising costs, because teachers' salaries receive priority when school boards pare budgets in fighting the cost squeeze. Further, the Hope Reports (1971) claim that within the past two years, severe budget cuts have seriously affected television operations in large schools and many TV sets in schools are not currently used.

3.4 User Institutions: Existing Structure of Systems and Networks

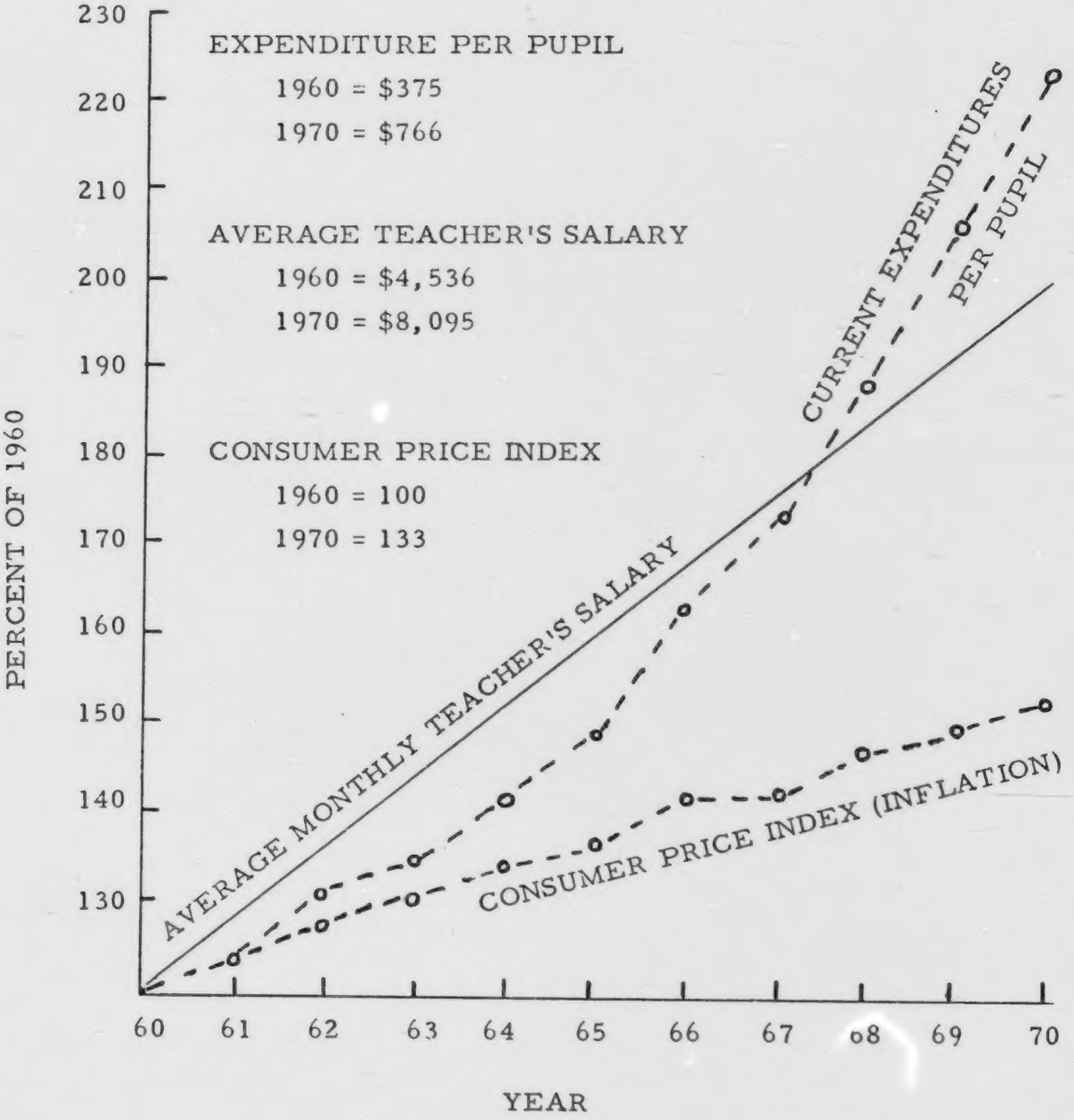
Table 3-2 provides information on new media devices that are now in use or are contemplated for use in schools within an ITV service area. The most popular equipment by far is the slant-track video recorder, followed by video cassette units.

TABLE 3-2

NEW MEDIA DEVICES IN USE OR CONTEMPLATED FOR USE
IN SECONDARY SCHOOLS AND UNIVERSITIES, BY ITV SERVICE

	TOTAL 334	BDCST 91	SCHOOL CCTV 72	UNIV CCTV 143	ITFS 38	CATV 10
Video cassette playback units	31.1%	34.1%	27.8%	31.5%	26.3%	20.0%
Video cassette record/playback units	44.6%	46.2%	30.6%	50.3%	39.5%	20.0%
Private CATV sub-channel access	25.4%	34.1%	30.6%	21.7%	21.1%	70.0%
Slow scan television	2.4%	1.1%	2.8%	4.2%	0	10.0%
Video and audio storage/retrieval systems	24.0%	23.1%	23.6%	26.6%	18.4%	30.0%
Slant-track video recorders	88.9%	89.5%	100%	89.2%	79.0%	100%

(Source: *A Composite Profile*, *op. cit.*, 1971.)



Source: Washington University Memorandum No. 72/2 March, 1972. St. Louis, Mo., 1972. (N. B. - not copyrighted)

Figure 3-1 Salaries, Current Expense Per Pupil, and Inflation 1960-1970

With regard to audio-visual equipment in general, the Department of Audiovisual Instruction of the National Education Association in their *Highlights of Schools Using Educational Media* (1969) compiled statistics of the different kinds of audio-visual equipment utilized by schools. These are shown in Table 3-3.

Finally, Table 3-4 gives us an indication of the broadcasting hours of public television in general, and how much of this time is being used for programming in the classroom.

These tables give us a general picture of the existing structure of systems and networks in schools. It should be added, to give some picture of how schools are allocating their audio-visual budgets, that according to the Hope Reports (1971) expenditure was highest for motion picture projectors ($34.3 million), with secondary schools spending less for videotape recorders ($14 million) and CCTV ($9 million). Expenditures for motion picture projectors and videotape recorders, however, were up 11% and 12% respectively, whereas the outlay for CCTV experienced a 25% decline.

3.5 Teachers and ITV

The cost of television is prohibitive if television cannot be used to replace teachers, but can television actually replace many teachers? Probably not, as long as one of the major functions of teachers in secondary schools is custodial. As Anderson and Greenberg (1972) succinctly put it, "we find three functions of education: to certify students, to keep them in custody both for parts of the day and parts of their lives, and to teach skills, knowledge and attitudes desired by society." Whether ITV teaches skills, knowledge, and social attitudes better than traditional teaching methods is a moot point. However, there is no gainsaying the the fact that teachers fulfill the function of custodians better than television sets. Therefore, it is unlikely that teachers will be replaced by television sets to such a degree that schools would be able to reap substantial savings. At present, nobody has figured out how to integrate television with the custodial function of schools.

BEST COPY AVAILABLE

TABLE 3-3

AUDIOVISUAL EQUIPMENT AND MATERIAL INVENTORY
OF 3,142 SCHOOL BUILDINGS

TYPES OF AV MATERIALS AND EQUIPMENT	TOTAL NUMBER OF ITEMS OF MATERIAL AND EQUIPMENT IN THE SCHOOL BUILDING	AVERAGE NUMBER OF MATERIALS OR EQUIPMENT PER THE 3,142 SCHOOL BUILDINGS RESPONDING	NUMBER OF SCHOOLS ALSO HAVING ITEMS AVAILABLE TO THE BUILDING FROM A CENTRAL SOURCE SERVING ALL SCHOOLS IN THE SYSTEM
16 MM PROJECTORS	7,145	2.27	658
16 MM FILMS CATALOGED IN THE SCHOOL BUILDING	30,286	9.64	594
8 MM PROJECTORS	406	.13	166
8 MM FILMS CATALOGED IN THE SCHOOL BUILDING	2,856	.91	139
OVERHEAD PROJECTORS	13,946	4.44	574
OVERHEAD TRANSPARENCIES FOR THE SCHOOL BUILDING	143,856	45.78	428
FILMSTRIP OR SLIDE PROJECTORS	9,370	2.98	611
FILMSTRIPS CATALOGED IN THE SCHOOL BUILDING	425,291	135.36	757
INDIVIDUAL FILMSTRIP OR SLIDE VIEWERS	4,485	1.43	412
EARPHONE SETS	15,826	5.04	222
TELEVISION RECEIVERS	4,576	1.45	201
RADIOS	4,640	1.48	230
TAPE RECORDERS	8,585	2.73	572
TAPES CATALOGED IN THE SCHOOL BUILDING	55,676	17.72	383
MICROFILM READERS	119	04	46
CATALOGED STILL OR FLAT PICTURES	343,894	109.45	260
AUTOMATIC READING DEVICES (SUCH AS CONTROLLED READER, TACHISTOSCOPE, LANGUAGE MASTER)	2,712	.86	279
PROGRAMS FOR AUTOMATIC READING DEVICES	9,223	2.94	174
REARVIEW PROJECTORS	612	.19	97
CAMERAS - 16 MM (MOTION)	389	.12	161
CAMERAS - 8 MM (MOTION)	198	.06	113
CAMERAS - FOR SLIDES	748	.24	210
PHOTOGRAPHIC DARK ROOM	688	.22	159
STUDENT CARRELS OR INDIVIDUAL LEARNING UNITS	5,811	1.85	46
RECORDS (DISC)	198,177	67.03	526
RECORD PLAYERS	16,027	5.10	501
OPAQUE PROJECTORS	2,532	.81	478
PROJECTION SCREENS	21,921	6.98	506

Source: National Education Association, Highlights of Schools Using Educational Media, Washington, D.C. 1968.

TABLE 3-4

BROADCAST HOURS OF PUBLIC TELEVISION STATIONS, BY TYPE OF PROGRAMMING AND BY TYPE OF LICENSEE, GEOGRAPHIC REGION, AND BUDGET SIZE: UNITED STATES AND OUTLYING AREAS, FISCAL YEAR 1971

Type of Licensee, geographic region, and adjusted budget size	Number of Stations	Broadcast hours, by type of programming					
		Total		Programming for classroom		Programming for general audience	
		Number	Percent	Number	Percent	Number	Percent
1	2	3	4	5	6	7	8
Total	193	639,611	100.0	226,165	100.0	403,446	100.0
Type of licensee:							
Institutions of higher education	58	174,241	27.3	49,315	21.8	124,926	30.2
Local public school systems	23	61,549	9.6	27,997	12.4	33,552	8.1
State authority, State education agency, municipal authority, and other licensed agencies	60	222,162	34.7	89,989	39.8	132,173	32.0
Community organizations	52	181,659	28.4	58,864	26.0	122,795	29.7
Geographic region:							
North Atlantic	39	135,017	21.1	40,792	18.0	94,225	22.8
Great Lakes and Plains	47	156,450	24.5	57,524	25.4	98,926	23.9
Southeast	67	227,403	35.6	89,301	39.5	138,102	33.4
West and Southwest	37	112,077	17.5	36,848	16.3	75,229	18.2
Outlying areas	3	8,664	1.3	1,700	0.8	6,964	1.7
Adjusted budget size:							
Under $100,000	6	13,503	2.1	6,170	2.7	7,333	1.8
$100,000-$249,999	16	43,060	6.7	12,856	5.7	30,204	7.3
$250,000-$699,999	70	213,326	33.4	70,211	31.1	143,115	34.6
$700,000-$1,999,999	69	239,411	37.4	91,903	40.6	147,508	35.7
$2,000,000 and over	32	130,311	20.4	45,025	19.9	85,286	20.6

SOURCE: U. S. Department of Health, Education, and Welfare, Office of Education, and Corporation for Public Broadcasting. Broadcast and Production Statistics of Public Television Stations and Licensees: Fiscal Year 1971. Washington, D.C., 1972.

BEST COPY AVAILABLE

The simple fact that classrooms are run by teachers makes the implementation of ITV in the classroom a complex matter, for teachers may see television sets as rivals that threaten their dominant position in the classroom. The question of teacher resistance to ITV is a difficult one, since teachers may not want to admit to media specialists and other educators that they are "against progress" by being against the implementation of ITV in the classroom. Teachers, particularly in the liberal arts, may merely be uncomfortable with any kind of complex electronic equipment, feeling that they do not have the mechanical ability to smoothly operate such equipment in the classroom. Or they may feel a certain disdain for the "middle-brow" and "low-brow" world of television as opposed to the "high-brow" world of books. For some teachers, television smacks of a futuristic world, like the one described in Orwell's 1984, where people become dehumanized by television - become puppets obedient to a totalitarian state.

Media specialists interviewed in our survey thought that if they had enough time and a large enough staff to educate teachers more fully about the advantages of ITV, they could dispel whatever doubts teachers had about it. Clearly the training of teachers to make better use of ITV facilities would make ITV more effective in schools. Educators themselves, as Table 3-5 shows, see this lack of training as one of their major problems. We found only one school district among the 17 in our sample that provided comprehensive in-service training in production and use of ITV for teachers.

We would expect media specialists to be optimistic about teachers' eventually accepting their views of the media, but we should be wary of unfounded optimism. In some cases the teacher can reduce, instead of enhance, the effectiveness of ITV; she or he must be willing to work with ITV and no external pressure can compensate for a lack of such willingness. Some school districts have poured thousands of dollars into ITV, only to have a tiny percentage of the teachers utilize it.

TABLE 3-5

PERCEPTIONS OF RESTRICTION OF ITV SERVICE DUE TO INADEQUATE TRAINING OF CLASSROOM TEACHERS, SECONDARY SCHOOLS AND UNIVERSITIES

	Total	BDCST	School CCTV	Univ CCTV	ITFS	CATV
	344	94	72	145	43	10
Lack of Training Restricts	57.3%	56.4%	51.4%	61.4%	58.1%	70.0%
Lack of Training does not Restrict	42.7%	43.6%	48.6%	38.6%	41.9%	30.0%

SOURCE: A Composite Profile, op. cit., 1971.

In any case, the teachers we interviewed were less enthusiastic than the media specialists about ITV. Aside from complaining about the impersonality of televised instruction, they cited the poor quality of many available programs. Unlike media specialists, teachers tend to judge the finished product before them rather than think of the potential of the media for making better-quality products. Further, since many distribution systems now in existence have a limited channel capacity, difficulty with scheduling is another problem that makes teachers disenchanted with ITV and prevents its optimal utilization. Finally, we speculate that although some teachers truly do welcome ITV, they do not take the time and effort to acquaint themselves with how to make the best possible use of it. Burdened with the many chores that teachers have in secondary schools, they find it easier to resort to traditional methods of instruction, since they have little time or energy to carefully integrate ITV into their curricula.

But there are other factors, aside from budgetary limitations and teacher resistance, that prevent ITV's successful implementation in secondary schools. In most cases the decision to invest in instructional television is made by administrators at a regional level and facilities and staff are provided to serve the entire district. While this approach has the positive advantage of sharing available resources, the removal of the individual schools' faculty members from the decision-making process is not conducive to widespread classroom cooperation and involvement. In practice, the ITV directors are saddled with the need to continually proclaim the nature and advantages of their programs.

Another important consideration is the poor quality of much of the software that has been developed for ITV. This problem will be examined in the following section on producer attitudes towards the educational market.

3.6 ITV and the Communications Industry

In trying to assess the market for instructional television programs in secondary schools, we interviewed a group of producers that included representatives from the major companies in the CATV, Pay TV, and audio-visual fields, among them RCA, TelePrompTer, Athena Communications, McGraw-Hill, and Time-Life Video. This group was able to describe the development and the marketing of delivery systems as well as to explain the economic factors affecting the market for hardware and software.

Most of the producers said that the market for educational software was too small, and that therefore they were reluctant to invest heavily in either research and development or production for this market. As one independent educational producer put it: "The biggest problem is that although educational material exists and there are educational institutions which buy it, there is not really an educational market. Schools do buy films, but the purchase cost of film is so high that each potential buyer must preview it first before saying yes or no. There is virtually no way to mass market to schools." Perhaps because the market for educational software is small (according to the Educational Media Producers Council, $160.7 million was spent on software in 1972) this market does not offer rewards lucrative enough to attract talented and imaginative producers and educational films are often inferior and boring. The failure rate for many new companies producing educational software has been uncomfortably high. Aside from the high-risk nature of the educational market, the production of software has not attracted the kind of talent that goes into making superior commercials or entertaining movies because the making of educational programs is often supervised or guided by educators who have little sense of the possibilities of video and who distrust something that seems like entertainment.

3.7 Software Analysis

Most of the software produced for school consumption is in the form of supplementary enrichment material - very often these programs are originally broadcast as entertainment. The software, then, is rarely curricula-oriented, and it is often difficult to structure it into an actual course. At present, though, there are producers and ITV specialists working with curricula coordinators. McGraw-Hill Films regularly sends representatives to consult with regional curricula developers. In addition, we found that in schools that produced some of their own material for ITV, the media specialists maintained close contact with faculty and curricula coordinators, actively seeking their advice and co-operation.

Analysis of software sales and production indicates that 16 mm is still the leading system. According to the 1972 Survey of Educational Media Producers' Sales, 16 mm films, which are usually sold to schools at the district level, dominate the market for educational media. However, increased sales efforts are now being directed at the building level rather than district level. Sound filmstrips comprise the second largest share of the market, having in the last five years switched places with silent filmstrips. Multimedia kits, both A-V and print-oriented, now hold third place in share of the market for educational media. The annual growth rates of production of sound filmstrips and multimedia kits were over 400% and 300%, respectively, in 1972. Table 3-6 lists some of these figures compiled by the Educational Media Producers Council from the 1972 survey of sales. These figures back up the statements made by the Editor-in-Chief of McGraw-Hill Films. She explained the shift to selling at the building level in terms of their experience that schools have difficulty accessing materials which are stored at the district level.

TABLE 3-6

INDICATORS OF THE EDUCATIONAL MARKET FOR 16 MM FILMS, SOUND FILMSTRIPS, AND MULTIMEDIA KITS

	1972: SALES (in millions)		MARKET SHARE (percent)		ANNUAL GROWTH RATE (percent)	
		rank		rank		rank
16 MM	$54.0	(1)	25.2	(1)	111.8	(7)
SOUND FILMSTRIP	$42.2	(2)	19.6	(2)	405.8	(4)
MULTIMEDIA KITS	$27.2	(3)	12.7	(3)	289.4	(2)

(Source: Annual Survey and Analysis of Educational Media Producer's Sales, Fairfax, Va., 1972. Reprinted with permission of the Educational Media Producers Council/National Audio-Visual Association, Inc.)

McGraw-Hill Films' educational programming, which comprises 90% of their production, reflects the existing demand for audio-visual materials in specific subject areas. Language arts, social science, and science are the fields that make greatest use of non-print materials. Table 3-7 shows the breakdown of sales of educational media products by subject area. Reports from the ITV directors we interviewed confirm that in video as well as in other media, these three subject areas are the most popular.

The dominance of language arts and social science programming reflects the fact that much of the software marketed as educational is produced initially as entertainment or as supplemental enrichment to school programs, and these particular subject areas can most easily utilize material which is not rigidly discipline-specific.

Other commercial producers, although not as heavily committed to educational programming as McGraw-Hill, do offer software to the educational market. Time-Life Films distributes between six and seven hundred 16 mm films, produced for the most part by BBC-TV to schools, colleges, and libraries. As with McGraw-Hill, these films may be purchased or rented for a limited time period. More than one-third of these films fall into the category of social science or social studies, and another sixth of them deal with general and physical sciences; all of the films are to be used as supplemental enrichment to classroom studies.

The educational and vocational programs available on video cassette through Sony Corporation for use on their U-matic videotape player are directed at individual consumers for home use and at business concerns for institutional use. Of the approximately eighty programs offered in these areas, the large majority are vocation or career oriented, usually in the fields of medicine, business administration and skills, and engineering. MCA has issued a catalog of programs which will be available on its video disc once the disc is on the market, but these programs simply duplicate in new format Universal Studios' inventory of movies.

TABLE 3-7

SALES OF EDUCATIONAL MEDIA MATERIALS, BY SUBJECT AREAS

RANK	1971 Sales (in millions) $	%	1972 Sales (in millions) $	%
1. Language Arts	34.3	35.9	39.3	35.7
2. Social Studies	17.3	18.1	20.2	18.3
3. Science	16.3	17.2	17.4	15.8
4. Mathematics	6.6	6.9	8.7	7.9
5. Guidance and Health	6.2	6.5	7.4	6.7
6. Vocational	4.8	5.1	6.5	5.9
7. Music and Art	4.2	4.4	4.2	3.8
8.* Other Products (Boxed Materials, Manipulative Aids, Words, etc.)	2.9	3.0	3.7	3.4
9. Foreign Languages	2.8	2.9	2.7	2.5
Total	95.4	100%	110.1	100%

*Discontinued category

SOURCE: Annual Survey of Educational Media Producers' Sales, Fairfax, Va., 1972. Reprinted with permission of the Educational Media Producers Council/National Audio-Visual Association, Inc.

We found that ITV software produced in schools for their own use also followed this pattern of emphasis on interdisciplinary enrichment. For example, in the library of 38 videotaped lessons prepared by teachers in the Glassboro, New Jersey, public schools, eight lessons are in social sciences; five more lessons are in language arts; and four lessons are in science.

The tapes produced at Glassboro which had a curriculum-oriented format were in career education areas, such as a series of lessons on auto mechanics, one on quantity cooking and catering, and another on drama production.

In conclusion, we find a need for ITV software in a wider range of subject areas -- vocational skills and career training seem especially likely candidates. Added efforts on the part of producers to work closely with curricula coordinators and faculty can aid in the production of ITV programs which may be fully integrated into classroom learning activities throughout the course of instruction.

3.8 Conclusion -- The Future of ITV in Secondary Schools

Almost all reports about the future of instructional television in secondary schools are gloomy. A 1970 planning report, Trends in Instructional Technology, maintains that "little change can be expected in the schools in their adoption of instructional technology, and that such adoption that did occur would be random and ill-defined, and that there might even be retrenchment in the adoption of innovative techniques because of lack of financial support." Among the obstacles to improvement in instructional technology in American education are piecemeal application, a lack of data and uniform criteria, and a failure to develop unique methods of applying the new media. Many educators, one report suggested, are hostile toward technology, and the educational world in general lacks creativity, innovation, and flexibility in accepting technology as a solution to instructional problems.

Our research supports this negative prognosis. Yet, though we do not think there will be a significant expansion of ITV in secondary schools, ITV in schools is clearly here to stay. And in certain limited ways it can be an invaluable aid in secondary schools. In our survey of users we found that not only media specialists but also teachers and administrators had positive things to say about ITV. Most teachers claimed that the response of students to ITV has definitely been favorable. Having grown up watching television in their homes, many students do not feel threatened and overwhelmed by difficult material that is presented on television, whereas these feelings may arise when similar material is presented to them in books. For these students television means entertainment; it is part of their everyday world and not something alien imposed on them by teachers. Most teachers said that students absorb information more readily from television than from books, especially those students with reading deficiencies. Many teachers also emphasized that ITV enables them to offer specialized or sensitive material that lay outside the teachers' areas of competence. ITV programs may also serve as surrogate field trips, giving the students an opportunity to see places they could never visit. Thus, ITV can and does offer a wider range of material than could ever be presented by the teachers themselves.

As Tables 3-8 and 3-9 suggest, teachers view ITV primarily as a supplement to traditional classroom teaching, a supplement that enables them to develop more flexible and more interesting curricula than was possible in the past.

The remarks elicited from these users agree in general with comments about ITV made by a wide variety of educators. ITV programs in the schools are effective when television teachers are knowledgeable in their fields and enthusiastic in their delivery. In addition, programs made for ITV are sometimes more carefully prepared and better presented than the average teacher's lessons.

ITV can also be used to great advantage in particular kinds of educational programs and in schools that have special needs and

TABLE 3-8

RELATIVE IMPORTANCE OF USES OF ITV IN SECONDARY SCHOOLS AND UNIVERSITIES

	Total	BDCST	School CCTV	Univ CCTV	ITFS	CATV
ITV is seen primarily to extend or enrich resources already used in the educational program.	1	1	1	1	1	4
ITV is seen primarily to give the teacher material to use in an established instructional process.	2	2	2	2	2	2
ITV is seen primarily to facilitate a classroom course-of-study by providing a scope and sequence for the teacher to follow in the classroom.	3	3	3	3	3	3
ITV is seen primarily to provide instruction directly to the student without relying on other instructional intervention.	4	4	4	4	4	1

Average Rank Order Indicated
(1=most important, 4=least important)

SOURCE: A Composite Profile, op. cit., 1971.

TABLE 3-9

ACTUAL USE OF ITV IN SECONDARY SCHOOLS AND UNIVERSITIES

	Total	BDCST	School CCTV	Univ CCTV	ITFS	CATV
ITV is most often used to give a fuller dimension to an educational program that already exists.	1	1	1	1	2	2
ITV is used to provide something that usually is not available for teachers to use in implementing their instruction.	2	2	2	2	1	1
ITV is used by teachers to help structure what they teach in the classroom situation.	3	3	3	3	3	3
ITV is used to reach the individual learner directly without relying on other instruction intervention.	4	4	4	4	4	4

Average Rank Order Indicated
(1=most often used, 4=least frequently used)

SOURCE: A Composite Profile, op. cit., 1971 problems. Television is an efficient tool for teaching vocational skills. Detailed mechanical work can be demonstrated more effectively over ITV than by the conventional lecture-demonstration method. According to a recent study (1973), tenth-grade students who were taught carburetor fundamentals, overhaul, and service by means of television could perform these skills better than students taught by conventional methods. Since the use of video demonstrations gave the teacher more time to work with students on an individual basis, these students' superior performance may not have been a result of the video demonstration alone. Whatever the case, the success of the teacher-technology mix was clear.

Television also can make instruction more exciting and rewarding in such areas as art and music classes. In these areas, too, ITV can be cost-effective. Without television, Hagerstown, Maryland estimated an annual expenditure of more than $250,000 to provide art and music specialists for elementary schools, whereas Hagerstown operates the whole television network for slightly more than $300,000. Thus, ITV in secondary schools can save money on specialized courses that require teachers with specific kinds of skills. By having his lecture televised, a teacher can be "shared" by several classes or schools within a school system.

The problem of hiring specialized teachers becomes more acute in school systems that are scattered over rural areas - systems that often cannot afford to hire specialized teachers for a small number of students in a particular school. The Battelle report on the role of telecommunications in the regional delivery of education services (1972) reaffirms that provision for and maintenance of specialized courses is necessarily expensive, prohibitively so if done solely by individual teachers to rigorous quality standards. Battelle found that to reduce cost and maintain quality, ITV can be introduced to dispersed rural students who can thereby receive high quality vocational educational courses. In rural school systems, especially ones in poor areas that cannot attract high-quality teachers because of their location and low salaries, ITV is a logical means of teaching students vocational skills. In many of these areas there are currently insufficient vocational programs to meet projected manpower needs.

ITV, then, can be very effective in fulfilling a school system's limited and particular needs. Indeed, we would say that ITV is a necessity in certain poor and rural school systems that are desperately in need of teaching their students skills that would enable them to get jobs. But for the reasons we have outlined in this chapter, we do not think it is wise to promote ITV on a large scale in secondary schools in the United States. In the near future, other technologies may prove more useful to secondary schools, particularly equipment which lends itself to individualized instruction. Money spent implementing ITV on a large scale in secondary schools might be money thrown down the drain. As Anderson and Greenberg (1972) put it: "Data from the experience of the United States Office of Education suggests that very large expenditures of money can simply be swallowed up with neither marked increase in pupil performance nor much addition to our knowledge of the educational process. In short, there is overwhelming evidence that even large sums of money do not have an impact on the sort of results that are sought by schools." ITV has an important role in play in secondary education, but this role is a limited one, and adoption of ITV on a wide scale will not solve the many problems besetting secondary education in the United States today. Implemented cautiously and carefully, however, ITV can definitely help make secondary education more imaginative and more flexible. And in some areas of secondary education it can prove cost-effective.

SECTION IV

ASSESSMENT OF FUTURE DIRECTIONS FOR ITV

4.1 Identification of Factors Inhibiting ITV's Development in the Schools

ITV, as we said in the previous chapter, does have an important role to play in secondary schools, but we would like to emphasize that for various reasons this role will probably remain a limited one. In our interviews of users we found that even successful ITV programs in secondary schools are not quite as well-developed as they might be. If we look once again at the criteria the Ford Foundation lists for implementing technology in the secondary schools, we realize how difficult it would be for any one school system to meet all these criteria. The study lists eight criteria, but we feel that only four are essential:

- a recognized and generally agreed-upon need exists;
- leadership is exerted at the right level of authority, responsibility, and control;
- teachers participate in and support the project;
- adequate financial resources are provided for the duration of the program.

Of the eight school systems visited in the New Jersey-Pennsylvania area, four did not come close to meeting any of these four criteria. Of these four school systems, two admittedly were not involved in the implementation of Instructional Television. The other two, however, attempt to maintain ITV service; predictably, it is not successful in either case.

When we spoke to the Director of Educational Media for the Glassboro, New Jersey Public Schools, he complained about what he called "people problems" that prevent the optimal utilization of ITV in Glassboro's school system. "People problems" refer to attitudinal barriers as well as to technical problems that develop when inexperienced people handle complex equipment. These problems arose in Glassboro despite the fact that the school has a five-week summer workshop that trains about 20 teachers each summer in classroom television production - a program that has already trained about 50 per cent of Glassboro's teachers in making use of television in the classroom.

The most obvious complaint we heard at the schools where we interviewed was lack of money, not only for hardware and software but also for training teachers and supporting a professional technical staff. In every school except Glassboro, training for teachers was poor, limited and ineffective.

A second universal complaint was that of lack of information on the equipment and materials that are available, as well as information on how to use them. Many administrators and faculty members feel that they are asked to make decisions about the use of television before they actually understand what it's all about. Without exception, the users we interviewed agreed that there was a need for improved and continued dissemination of information about Instructional Television.

Another problem area is leadership. It is important that a media specialist be granted high-level administrative status in order to enable him to carry on an active role in planning the curricula and making sure that television is an integral part of the educational process. At Glassboro, for example, the Director of Educational Media reports directly to the superintendent of schools, and his status enables him to work as an equal with the five school principals of the different Glassboro schools. Yet most of the media specialists we interviewed said that they did not have such a status and were not often consulted in the planning of curricula. They seem to exist in a kind of educational limbo where their function is, for the most part, to "sell" their services. It is up to them to keep teachers informed about what the ITV program has to offer and how to use it. Thus, most of them spend much of their time in what we can call public relations activity, which prevents them from devoting more time to production.

Yet an administrative-level status for a professional technician does not automatically ensure smooth coordination with school boards, superintendents, principals, or faculty. Experience as a teacher generally provides practice in interacting with these kinds of people, and thus it is very helpful for a media specialist to have had some experience in the classroom and therefore to possess a first-hand knowledge of some of the problems that one faces as a classroom teacher. Even if this is the case, though, there may be a few communication gaps between media specialists and some teachers who will always regard technology in the classroom as a newfangled intrusion that disrupts traditional methods of instruction.

Buying the latest equipment can be an expensive hobby for a school system unless teachers are carefully trained to make optimal use of this equipment. However, the training itself does not necessarily mean that the ITV program will be as successful as it might be. The teachers in a school must be convinced that there is a definite need for ITV, yet more often than not teachers see ITV as a minor luxury - something that is not essential to their instruction - and thus they don't take time or make a real effort to insure its integration in their curricula.

Indeed, integration of ITV in the curricula is not a simple matter, for scheduling of ITV is often difficult. The Director of Educational Programming for the New Jersey Public Broadcasting Authority spoke of the limitations in the use of rental programs and how this adds to schedule problems. (If a rented program is only used for one week, it is hard to fit it in a telecast schedule so that every class that needs to see it actually does see it.) A media specialist at Willingboro High School in Willingboro, New Jersey, said his group is planning to obtain use of a second CATV channel so that they could add to schedule flexibility.

These scheduling problems, in addition to budget constraints, inevitably lead to the illegal practice of taping off-the-air and storing a tape library of pirated material. From what we learned in the user interviews, we would suspect that this is a widespread practice. Obviously, it is difficult for producers to get their rightful revenue from educational software. Many producers, aware of this practice, cite it as one of the reasons why they are reluctant to invest heavily in the educational market. We shall return to this question later in the chapter when we discuss the quality of educational software, which many teachers and media specialists admitted was poor. In addition, California has recently instituted a law that requires all potential software to be studied and assessed for verification that it accomplishes its educational purpose. While this is a fine idea from the user's point of view, it further inhibits producers from entering the market for educational software, especially if there are widely disparate standards for "material accountability."

For these and other reasons, then, ITV is having a difficult time making a significant impact on secondary education, and will probably have a difficult time in the near future. Though some media specialists, as well as some teachers and administrators, were guardedly optimistic about the expansion of ITV in secondary schools, most doubted whether enough money would ever be forthcoming to fully develop ITV in the schools. Most also doubted whether there really was a strong commitment on the part of many administrators and teachers to implement ITV more fully in secondary schools. One media specialist we interviewed said that after an initial period of expansion, which came about with the assistance of Title III funds, Federal assistance in this area has been sharply reduced and, together with the reduction in funds a certain disillusionment with, or loss of interest in, ITV has set in. As a result, many schools (some by necessity) have cut their budgets for ITV programs. "ITV as it exists now," he said, "is not a very great help to teachers." And he didn't think the situation would improve in the near future.

Thus we can easily find reasons for ITV's relative lack of success in secondary schools throughout the United States. We could, with some justification, pin the blame on shortsighted administrators or narrowminded teachers and exhort them to undergo a change of heart so that they become more fully committed to ITV in the schools. These efforts, though well-intentioned, will not prove very effective, for ITV in the schools will more often than not run up against additional barriers that will prevent its effective utilization. And given the complex bureaucratic mixture of teachers, administrators, and school boards that composes every school system, cooperation and innovation can be seen as elusive goals.

Because we can only hope for a limited expansion of ITV in secondary schools, we should not expect software to noticeably improve. According to most of the media specialists we interviewed, educational software is poor in quality, and in some areas - notably in vocational education - not much of it is available. As long as the market for educational and instructional software lies only in the schools this situation will not change, because producers have no incentives to spend time developing imaginative and sophisticated software for a market that is so small. As an independent filmmaker who has made software for secondary schools said to us: "Schools may buy movie projectors and videotape recorders, but they don't spend enough money to keep them supplied with software - and they don't spend enough on hardware to be effective either. Until the cost of software comes down, or until someone is willing to spend millions for programming, the educational market will continue to be small." Though ITV often makes use of locally-originated programming, it cannot exclusively rely on this kind of software. Teachers will only rely more heavily on ITV if they know that the software available to them can truly provide meaningful and imaginative additions to their courses.

4.2 Directions for Future Implementation of ITV

Is there a way out of the difficulties that ITV in the secondary schools has run up against? One way is to treat the question of ITV with "benign neglect," letting it float by itself and find its own particular level of development in any given school system. Some school systems might find it more in their interest to expand their ITV programs whereas other systems might want to cut back. In general, it might be preferable to wait a few years before going ahead with an extensive, school-based commitment to the new technologies. Before running to embrace ITV we should first try to determine whether there is a clearly-defined need for it, for in some respects contemporary technology is far ahead of the public's ability or desire to make use of it.

But the inhibiting factors that prevent ITV from fully developing in secondary schools do not necessarily prevail in other areas, and we think that ITV does have an important role to play in education - in the home rather than in the schools. By implementing ITV in the home the most obvious problems connected with expanding ITV in the schools can be avoided. First of all, ITV in the home cannot encounter any teacher resistance. Secondly, ITV in the home will not require massive funding for the necessary hardware, since it can develop as a spin-off from entertainment television. People already have the means of viewing the software - that is, the television set - and whatever other accessories they may need for ITV will most likely be purchased at the time they come on the market as new means of providing additional forms of entertainment. Thirdly, it is possible to sell educational software - to bill individual home viewers directly for use of the programs - thus generating greater returns to producers, and providing incentives for increased production. The key question, which we will deal with later in this section and in more detail in Section V, is whether many people will be willing to spend the money for the educational software.

There are several reasons why the nature of educational software geared to a home market might be significantly different from the kind of software made for a school market, and therefore might prove attractive to a relatively large audience of educational consumers. The extraordinary impact of Sesame Street has made educators aware that a new kind of approach to the making of educational software is warranted - an approach that imitates the techniques of successful television commercials, an approach that is more entertainment-oriented than previous kinds of educational software. According to one educational expert, the makers of Sesame Street came up with a series that proved television

- could teach and teach economically;

- could provide education, even outside the classroom, without an overt dialogue between learner and medium and without the intervention of a live teacher; and
- could produce lessons which could be broadcast to large numbers of children, including the disadvantaged, without introducing specialized cultural approaches.

Although some educators have objected that Sesame Street teaches children to passively absorb information rather than to think conceptually, and others have questioned whether disadvantaged children benefit as much from the program as do middle-class children, no one would deny that the series has shown that educational software could entertain while it educated.

One reason for Sesame Street's success is that it does not follow traditional educational methods. As Andrew Molnar of the United States Office of Education put it, "Frankly, I think Sesame Street succeeded because it did not go into the educational system, and didn't compete with it. We didn't get superintendents from 23,000 school districts to decide what the curriculum would be. We didn't worry that the curriculum might be determined by a handful of people. We didn't worry that it might have some ill effects as well as good effects. We just went ahead and did it." Sesame Street, then, by-passed the educational bureaucracy and came up with exciting and innovative educational software. Because ITV in the home is new educational territory, one that is not cluttered with traditional educational methods, it might be better able to exploit video's potentialities than has been done in the past. ITV in the home may lead to the development of different and, hopefully, more imaginative educational and instructional software than we have had in the past because producers, in trying to find ways of attracting and satisfying new groups of educational consumers, may rely more heavily on the talents of people who know how to make use of the medium's distinctive qualities.

But will producers be interested in producing educational software for the home? Sesame Street, after all, was geared to an undifferentiated mass market of pre-school children. Are other kinds of educational software, which of necessity must be geared to smaller markets, capable of being lucrative enough to attract producers? This question is difficult to answer with any degree of accuracy, since it depends on many variables. The producers we interviewed did say, however, that there was a much greater chance for ITV to develop in the home as a spin-off from the entertainment industry, even though they admitted that they do not have enough data to assess this potential market carefully, nor do they have sufficient financial resources to enable them to devote time to collecting this data. Their market research in this area is minimal. And because they do not know the outlines of such a market, they prefer to avoid the risks of producing software for ITV in the home and keep their operations geared to entertainment. Distribution system operators we spoke with in the CATV and Pay TV fields did indicate a strong interest in educational programming. Because operators are responsible for providing programming which will make their particular systems attractive to what they hope will be an ever-increasing audience, they are always interested in new sources of software, and several stated that they would be pleased to test-market educational programming on their systems.

But before we try to determine the extent and structure of the potential market for ITV in the home, we must consider certain functions - technical as well as general - that ITV in the home must fulfill in order for ITV to be attractive to both users and producers.

4.3 Operational Requirements for ITV in the Home

In order for ITV in the home to be marketable, the means of viewing - that is, the television set - must have certain functional capabilities. The consumer's access time to software must be reasonably fast and the quality of the resolution must also be high. In addition, the user must be able to have access to the software at a time convenient to him, so the problem of scheduling is important. ITV in the home must capitalize on the media's ability to allow potential users to pick and choose the time and place for education much more freely than they are presently capable of doing. ITV of course cannot have the portability of books, but it must have a similar flexibility of use, enabling the user to take advantage of it whenever he has the time and desire to do so. The most obvious requirement for ITV in the home, however, is that the software be comparable in cost to other available modes of self-instruction, and this must be taken into account when thinking about demand programming. In Section VII we describe in detail the kinds of distribution systems in various stages of development and how they fulfill these particular functions.

It is not sufficient, however, that ITV in the home simply offer the advantages of flexibility and convenience. There will be no real incentive to buy or use supplemental education through ITV unless the general educational or vocational programs offered are recognized and accredited by educational institutions and industrial firms. Of course these institutions and firms must be given assurance that the software does instruct; that is, a process of learning verification should be established, with the users perhaps taking standardized tests on completion of a course. In any case, if we are going to develop an educational system that relies heavily on technology to create alternative learning experiences outside the schoolroom, we must keep in mind the importance of the certification function.

For producers, the prime requirement of ITV in the home is billing; they want to receive payment for the use of programs they produce or distribute. For example, the user might subscribe to the software through the mail, rent it from a library, buy it at a retail store, or have some device in his home that monitors what he views and bills him accordingly. It is significant that software producers were not especially concerned about the particular distribution system that the user might employ. They all believe that some kind of distribution system adaptable for billable ITV programming will exist in most homes within the next ten years, and any software made initially for one form of distribution could easily be converted to another form. Only if the producer can be sure that he is going to get returns for what goes on the consumer's television set will he have the incentive to invest in production for a home education market - provided of course that he has some indication that a market exists large enough to make it worthwhile for him to produce educational software at all.

4.4 Potential Structure of the ITV Market in the Home

We think the potential market for ITV in the home is large. According to a study soon to be published by Educational Testing Service, roughly three out of four American adults express an interest in engaging in some sort of learning. The study also indicates that in 1971-1972 there was nearly twice as much interest in receiving credit as there was actual credit received in part-time adult education courses. Whether these findings indicate that the American public has cited interests incorrectly or that credit for learning programs outside the regular educational channels is not as widely available as people would like it to be was not determined. If the latter is the case, then a sizable market for accredited learning has not yet been tapped, a market that includes all those American who have not received high school diplomas, or even college diplomas, as well as all those who want to acquire new job skills. This market is composed of people who, for a variety of reasons, cannot get to a school; it includes the chronically ill, the handicapped, the aged, prisoners, members of the armed forces, and persons living in remote areas. It includes all those people who, owing to the nature of their jobs or their family responsibilities, find it difficult or impossible to take courses in a school. There exists, then, a great number of people who would like to get a degree or certification which will enable them to get a job, increase their job mobi lity, get more pay for their present positions, or merely enhance their own self-image. This market could also include people who feel uncomfortable in classroom situations or feel embarrassed, perhaps, about acknowledging deficiencies in certain areas.

Courses that lead to degrees and that teach people the specific skills necessary for a job or a career would be the meat and potatoes, as it were, of ITV in the home, but other kinds of courses might prove just as successful. Though the study conducted by Educational Testing Service reported that vocationally-related subjects are clearly the most widely desired courses, the study also found that there is a modest trend toward increased involvement in avocational learning on the part of American adults over the past decade. The last five years have witnessed a proliferation of "how" books - first cousins of the do-it-yourself books. Many of these "how" books might prove extremely successful if they were transformed into software for television, especially if the subjects require demonstrations of detailed techniques. At present television is used extensively in schools of dentistry and medicine for making detailed demonstrations easily available to a large number of students.

With the rise of consumerism, then, courses that give people practical advice on how to cope with various problems they face in their daily lives might prove extremely popular on television. But courses that are culturally or academically oriented might also be attractive to potential users, especially ones for which demonstration is fundamental, such as courses in science, ballet technique, photography, stage design and lighting, etc.

It may be objected that these markets will always be too small to create the incentive to produce software for them. But if there were a definite means of billing for special programs that are received on television, then producers could make money on their investment in software even though the market remained small. A look at the magazine business might prove helpful for adumbrating the future configuration of the market for ITV in the home. Several general audience magazines - most notably Look and Life - have failed, but many specific magazines, ones that have limited but well-defined readerships, have been very successful. Several producers we interviewed pointed out that the film industry has recently ventured into the kind of marketing system that we find in the magazine industry - subscription marketing. The American Film Theatre, which has recently produced several film versions of famous contemporary plays, has sold its high-quality art movies by means of subscription. Producers said that the same kind of marketing could be done with ITV - provided that subscription billing were possible and provided that market research were conducted.

The idea of accredited education in the home has been with us a fairly long time. University-affiliated correspondence courses were first offered in the late 19th century. Some colleges and universities have already given courses over educational television and more are planning to do so in the near future. One of the oldest and most successful instructional programs on broadcast television is Chicago's TV College, which is an extension of Chicago City College. In its twelfth year, the college is on the air about twenty-five hours a week, presenting nine courses on a credit or noncredit basis.

Moreover, technology has figured prominently in several countries' efforts to extend higher educational opportunities to persons who had previously been unable to take advantage of them. These programs are aimed in general at people who could not afford to go to college because they had to devote full time to earning a living. Sweden, Australia, Japan, and West Germany have instituted Open University programs that have relied heavily on radio instruction, and gradually they are complementing it with instruction by television. Perhaps the most ambitious venture in extramural higher education ever undertaken is Great Britain's Open University, which offers some twenty-four courses to part-time students twenty-one years of age and older. Teaching by television and radio are an integral part of all its courses, but students also use carefully prepared texts and have access to local study centers located throughout Britain. In its first year the Open University enrolled 25,000 students out of 42,000 applicants.

In order to determine the effectiveness of the Open

University's course programs and the efficiency of the procedures for using them, four American universities agreed in September, 1972, to participate in a one-year trial of the materials from Britain's program. The participating universities are Rutgers University, the University of Maryland, the University of Houston, and California State University (San Diego). The open university that has received the most publicity in the United States is Empire State College at Saratoga, New York. However, the college does not currently telecast lectures and does not have plans for instituting ITV in the near future. Unlike Empire State College, the State University of Nebraska, an open university that began its operations in 1973, will use multi-media extensively.

We cannot say with any certainty, though, that the success of Britain's Open University predicates success for similar ventures in the United States. There are significant differences in American and English attitudes towards educational television, for no network or organized distribution system in this country is quite like the BBC, which has played a significant role in English culture during the past forty years. No equivalent institution in the United States has the prestige and influence that the BBC has in England. Furthermore, television producers and other broadcasting professionals in this country have considerably lower status than their counterparts in England, and we wonder whether academicians in this country would cooperate with them as easily as academicians in England have with broadcasting people there. In England many famous and influential academicians often appear on television, something that rarely happens in this country.

There are other factors that may inhibit the growth of ITV in the home. Aside from the cost and the availability of software and the problem of accreditation, which we have already touched upon, there is also the question whether educational programs can complete with entertainment programs for the "space" on a household's television set. Although the user may be able to view the software at a time that is convenient to him, he still must view it over the household's television set. Scheduling difficulties may arise if everyone in a family works during the day and wants to make use of the television between, say, seven and ten p.m. We cannot easily dismiss this problem. Nevertheless families that have two or three television sets, as many do, will be able to tune into several program offerings simultaneously.

Despite these problems and undoubtedly others we cannot foresee, it is clear that the future for ITV lies in the home, and we support the Carnegie Commission's prediction that traditional institutions may employ the new technologies for ten or twenty per cent of their instruction by the year 2000, while extramural education may make use of them for up to eighty per cent of their instruction.

4.5 Conclusions: Schools vs. Education

Schools, as everyone knows, have increasingly been subjected to strong criticism during the past ten years from educators, parents - even the students themselves. Whatever we think about the particular charges that have been directed against schools, one thing is clear: in general there is in the United States a growing disenchantment with formal education. No longer do we believe that more money dispensed to schools is the indirect answer to many of the problems that bedevil American society. No longer are we convinced that increased schooling is the way to a better society. And, more specifically, we no longer are certain that education leads to economic success. The current glut of physicists, college professors, and other highly-educated people disproves the hypothesis that someone who has acquired several degrees must necessarily have a high-paying job. Indeed, one is constantly reminded that the man who has a particular vocational skill may make a lot more money than a college graduate who is either without any particular training or is trained for a field that is oversupplied with potential employees.

While people have begun to cast a cold and clear eye on schools and schooling, this disenchantment with schools does not mean that the public has given up on education. In fact, according to the ETS study we previously cited, more people have expressed an interest in taking adult education courses than ever before. ITV in the home will enable them to take courses in whatever subject they want without having to drive to a school or university. Naturally some people will prefer the atmosphere of a classroom to that of a home; some people take courses as a social activity or to get away from their homes for a while. ITV in the home will complement rather than replace adult education in the schools.

ITV in the home, then, increases the educational consumer's option. It is a way of making education more flexible and diversified. ITV in the home can reach people who have been thought to be outside the circle of educational consumers - people who are in need of specific skills to enable them to improve their chances for a decent, well-paying job. For many reasons these people are unable or reluctant to attend a traditional school in order to learn these skills. The Appalachian TV home visit mobile van program is an example of what might be done for other groups who are in need of a better general education and specific vocational skills - e.g., Eskimos, Indians, and migrant workers. But it is early to be overly optimistic about the chances of reaching these people through ITV in the home. Britain's Open University has found that most of its students are from the middle class, with only about one-sixth of the current enrollment coming from the working class. Perhaps these statistics reflect the fact that the Open University's curricula is basically academic in nature. If the kinds of software that meet the needs of the disadvantaged are produced, and it is possible to demonstrate significant benefit from these courses, then perhaps they will have the incentive to buy ITV programming.

In the long run the implementation of ITV in the home can only benefit the schools. If the home market does expand and provide incentives for producers to make software, more programs will be made which become available for use in school - and perhaps at rates lower than today's. In addition, the acceptance of ITV as a legitimate means of study in the home may serve to break down some attitudinal barriers in the schools. If ITV works in the home, then teachers may grow less suspicious of its use in the schools.

And the new kind of software generated for ITV in the home should go a long way toward convincing teachers of the possibilities of ITV, expanding their conceptions of the range of educational subjects, and changing their ideas about what can be done with the video medium. Finally, many educators will have had the experience of participating in the production and evaluation of self-instructional programs.

SECTION V

ITV HOME USE: PROGRAM MARKET DESCRIPTION

5.1 Introduction

Since there are only limited examples of ITV currently in use for home or individualized instruction, it is clearly not possible to extrapolate future market demand from current market demand. There are, of course, programs associated with open university courses which utilize video materials. And there are television-based courses of instruction transmitted by broadcast television. Nonetheless, we feel that current subscription to these programs is a poor indicator of what the demand would be if ITV programs on a wide range of subjects were easily available to the consumer.

Thus, we present in this section an indication of potential future demand based on the interest expressed in out-of-school instruction and on the current demand for all types of out-of-school instruction, not limited to such instruction already utilizing video materials. We do not mean to imply that all persons currently involved in home study or adult education would prefer ITV media; but we do mean to indicate that the potential market is not limited to those already committed to video instruction.

5.2 Market and Financial Characteristics

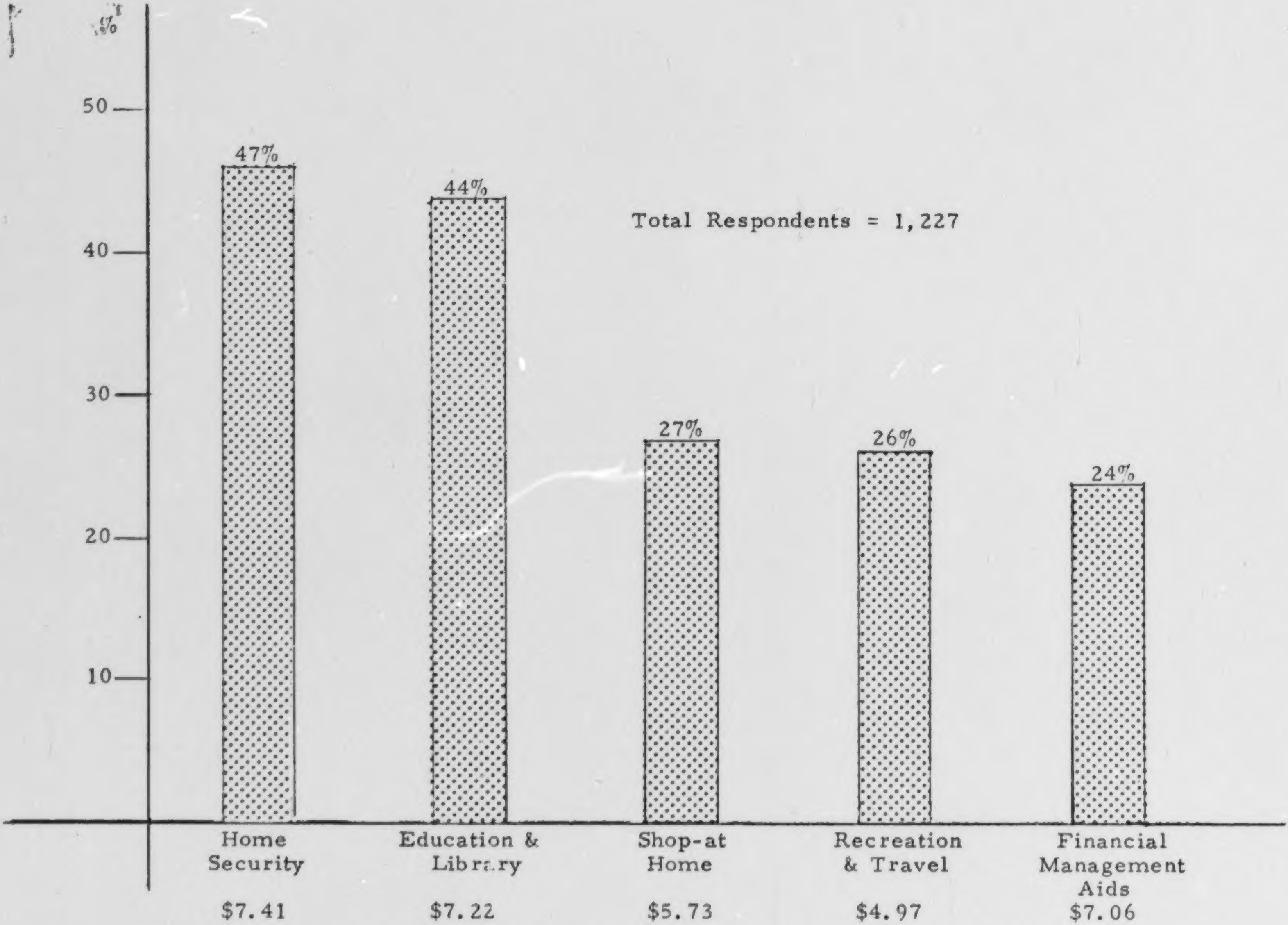
Rather than extrapolate from current usage of video instruction, one possible method to gauge potential future demand for ITV in home study is to conduct a survey of the general population to ascertain their felt needs and possible reactions to ITV modes. While such an approach is beyond the scope of this study, some attempt was made in this direction with respect to adult education by Rossi and Johnstone at the National Opinion Research Center, by Educational Testing Service as part of a research project for the Carnegie Commission on Nontraditional

Education, and, on a smaller scale, by Stanford Research Institute in their analysis of the current and projected status of CATV in the U. S.

From a survey of a nationwide random sample of adults living in private households in the continental United States who were not full-time students in 1972, ETS found that approximately three-fourths (77%) of the general public indicated an interest in some kind of further learning, but that only 1% of these individuals interested in further learning reported a preference for television or video cassettes as a learning method. This low preference seems to indicate little desire for nontraditional learning media, and points up the need for careful promotion of ITV for home use. At present, the general public does not regard television as an educational resource.

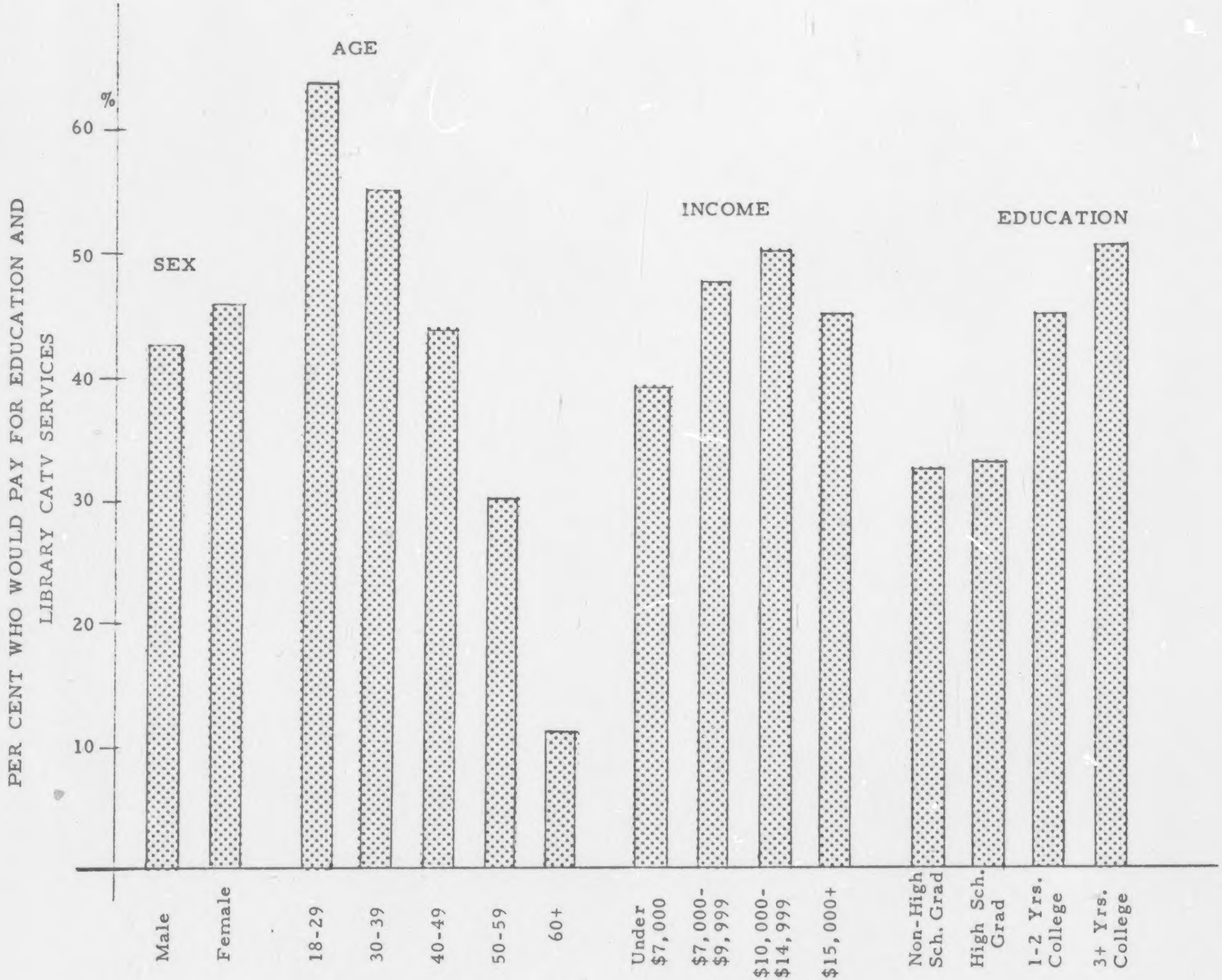
While it is dangerous to predict actual demand for a service or product from expressions of interest in it, the California-based survey conducted by the Stanford Research Institute in 1971 on the market for various home services which could be delivered on CATV (exclusive of entertainment programming) found that the greatest number of respondents were interested in home security services (47%) and education and library services (44%). When asked what they would be willing to pay on a monthly basis for education and library services, given that these services were available at extra fees, the average price quoted by respondents when there was an interest in the service was $7.22 (in comparison with monthly averages of $7.41 for home security, $7.06 for financial management aids, $5.73 for shopping, and $4.97 for recreation and travel services). Figure 5-1 shows graphically what percentage of the respondents said they would subscribe to the proposed services.

Figure 5-2 indicates demand for education and library services by sex, age, income, and education. It can be seen that willingness to pay decreases with age and increases with education and income up to $15,000 per year, after which it decreases. The greatest demand, reaching 65%, is predicted by the



Source: Business Opportunities in Cable Television, Volumes I, II, III Stanford Research Institute, Menlo Park, 1971.

Figure 5-1 Percent Who Would Subscribe to Proposed Services



Source: Business Opportunities in Cable Television, op. cit., 1971

Figure 5-2 Willingness to Pay for Education and Library Services at an Average Monthly Cost of $7.22

18-29 age group. Table 5-1 shows the retention rates, fifth grade through college entrance, of students in public and nonpublic schools, 1954-1962 through 1962-1970. It is evident that a continually growing number of young people are completing progressively higher levels of education. The statistics are favorable signs for televised delivery of educational services, since it has been illustrated that as education increases and age decreases the demand for educational programming on CATV increases.

However, anyone desiring to offer special services on CATV for a fee should keep in mind that subscriber penetration for cable systems depends to a large degree on the geographic location and the subscriber fee. In rural areas, where over-the-air reception is poor and nearby educational, cultural, and entertainment opportunities are lacking, it has been said that monthly subscriber fees anywhere in a range of $3-$8 will result in the same number of subscribers. In an urban area, on the other hand, alternatives to CATV are plentiful, and subscriber penetration is directly related to the monthly subscriber fee. Figure 5-3 shows the results of a MITRE Corporation study (1972) designed to determine demand for services as a function of subscriber fees charged. In urban areas, at least, it would seem that there is an upper limit to the monthly fee subscribers are willing to pay for cable services. As the fee is lowered, subscriber penetration goes up, regardless of whether services offered are one-way only or include two-way. For the system operator, then, a choice must be made between maximization of subscriber penetration with low monthly fees, or maximization of near-term profits with high fees. An operator's decision, for instance, may determine the extent to which a cable system can be useful for social service delivery.

5.3 Potential Demand Estimates

Because it would be foolhardy to project actual demand for ITV in the home on the basis of what the public claims to be interested in, or on the basis of demand for a single delivery system, we propose a second method of gauging future demand. This method is to base an indication of potential demand on a tabulation

TABLE 5-1

ESTIMATED RETENTION RATES, FIFTH GRADE THROUGH COLLEGE ENTRANCE, IN PUBLIC AND NON-PUBLIC SCHOOLS: UNITED STATES 1954-62 to 1962-70

School Year Pupils Entered Fifth Grade	Retention for 1,000 Pupils Who Entered 5th Grade									
	5th Grade	6th Grade	7th Grade	8th Grade	9th Grade	10th Grade	11th Grade	12th Grade	High School Graduate	College Entrance
1954	1,000	980	979	948	915	855	759	684	642	343
1956	1,000	985	984	948	930	871	790	728	676	362
1958	1,000	983	979	961	946	908	842	761	732	384
1960	1,000	980	973	967	952	913	858	787	749	452
1962	1,000	990	983	976	963	931	863	793	752[1]	465[1]

1/ Subject to revision when final data become available.

Source: Digest of Educational Statistics, 1972 Edition. U.S. Dept. of Health, Education and Welfare: National Center for Educational Statistics, Washington, D.C., 1972.

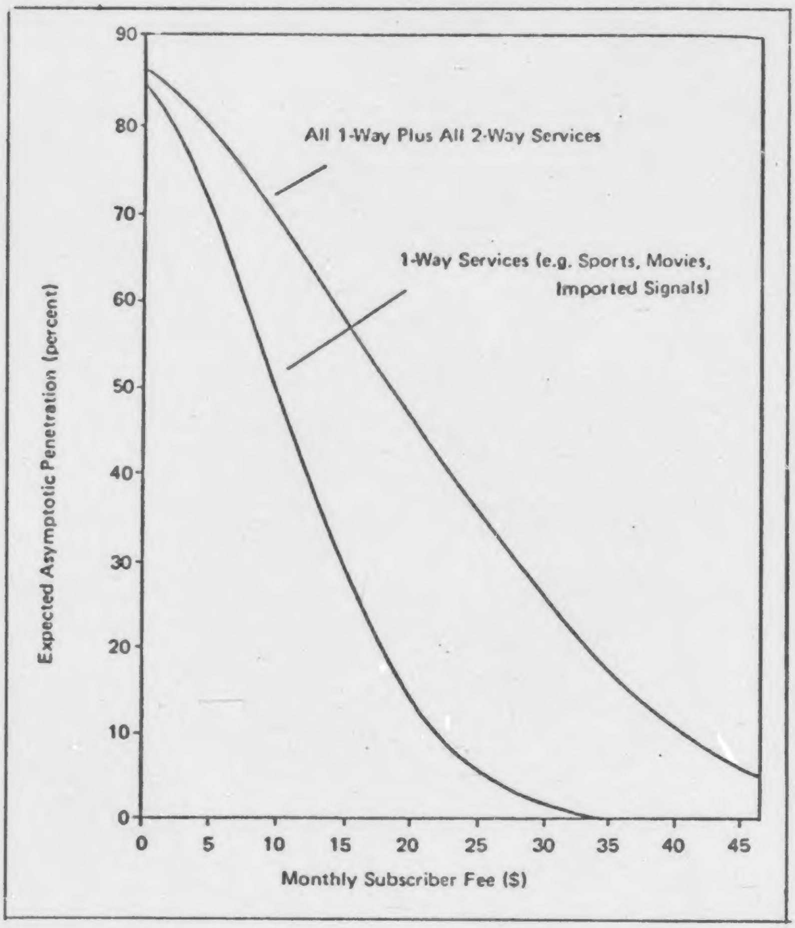


Figure 5-3 Relationship of Expected Final Penetration to Monthly Subscriber Fee for Two Combinations of Services of Urban Cable Systems.

Source: Urban Cable Systems. The MITRE Corporation, Washington, D.C., 1972.

of actual current demand in various areas of instruction outside of the formal school system. We feel that the several modes of video delivery which are likely to be implemented in the future can be used to supply a wide range of instructional needs ranging from the education of handicapped or homebound persons to degree equivalency and career training programs, and to instruction in home repair, crafts, and hobbies. Thus the areas of current demand which must be investigated cover a wide range and include book sales, correspondence courses, extension courses, and the like.

Response to current offerings in educational television is of questionable use in assessing a home market. Typically, ITV is available primarily within the formal school system or, like Sesame Street, is telecast nationwide as a free service designed to enrich or supplement formal education. Since we are interested in determining the demand for video delivery of instructional programs designed for use outside of full-time school attendance and for which the user will pay a fee, we are limiting our examination of current demand to participants in a variety of forms of adult education. The categories which are likely to contain persons interested in home delivery of ITV are:

- Private tutoring
- Public school and adult education programs
    - elementary and high school level
    - English language
    - cultural interest
    - vocational training
    - leisure activities
- College and university extension courses
    - academic subjects
    - professional courses (e.g., refresher courses)
    - agriculture/home economics extension courses
    - noncredit activities
- Correspondence courses
    - private sector
    - military
    - (university included under extension programs)
- Book and record sales of instructional materials
    - "how" books in home repair, crafts, etc.
    - self-instruction books in career fields, languages
    - language instruction records.

We have found no material that indicates the demand in book and record sales. Publishers consider book sales confidential. The trade organization does not distinguish between textbooks sold to schools and those designed for independent study, and it does not record sales data on "how" books separately from other non-fiction.

An indication of current enrollment in the other four areas, however, is presented in Table 5-2. The data in this table are based on a sample survey of approximately 105,000 adults polled by the Bureau of the Census for their 1969 Current Population Survey, and then weighted to give representative national figures. From this survey it was estimated that in 1969 over 13 million adults were enrolled in some form of adult education or, in other words, were involved in an instructional course other than as full time students at a formal educational institution. Data from other surveys indicate that, if anything, these 1969 figures are extremely conservative. (For example, the Association of University Evening Colleges - National University Extension Association reports a 1968-1969 registration of approximately 5,150,000, including classes, conferences, and correspondence - a figure that exceeds the 1969 Bureau of Census enrollment figures for college or university and correspondence courses combined by at least half a million, even though the Census included non-university-affiliated correspondence courses in its count.)

Table 5-3 indicates as a minimum the number of persons feeling the need for adult basic education, i.e., education which is normally part of a public school education to eighth grade. In the fiscal year 1966 there were 377,660 persons enrolled in basic education courses; by 1971, enrollment totaled 627,340, and the Office of Education estimated that enrollment in adult basic education in 1972 would be 691,000. Since the enactment of the Adult Education Act of 1966, the growth in enrollment in adult basic education courses has been accelerating rapidly, and even if this growth pattern levels off, it is safe to say that there are almost three-quarters of a million adults interested enough to

TABLE 5-2

INSTRUCTIONAL SOURCES UTILIZED FOR ADULT EDUCATION

United States, May, 1969

Instructional Sources	Total Participants (Weighted Total = 105,000)
All Sources (in thousands)	13,150
	Percent[1] of Total
Public or private school	27.7
College or University part time	25.2
Job Training	27.5
Correspondence Courses	8.0
Community Organizations	13.4
Tutor or Private Instructor	5.8
Other	10.3

1/ Percentages total more than 100 due to multiple responses.

Source: Participation in Adult Education, 1969. U.S. Dept. of Health, Education and Welfare: National Center for Educational Statistics, Washington, D.C., 1969.

TABLE 5-3

STUDENTS IN ADULT BASIC EDUCATION
UNITED STATES, FISCAL YEARS 1966-1971

Fiscal Year	U.S. Total
1966	377,660
1967	388,935
1968	455,730
1969	484,626
1970	535,888
1971	627,340
1972[1]	(691,000)

1/ Office of Education estimate

Source: Adult Basic Education Program Statistics, Student and Staff Data, July 1, 1968-June 30, 1969. National Center for Educational Statistics; and Adult Education. Annual Report, National Advisory Council on Adult Education, March 1972.

attend classes in basic education. There may be more who would respond to home study courses but cannot or will not attend classes at a fixed time in a fixed location. The National Advisory Council on Adult Education estimates 70,337,000 adults 16 years of age and over living in the fifty states and the District of Columbia who have not graduated from high school (Annual Report, op. cit.). Discounting older persons who are probably not interested in resuming their formal education, and those who have not yet achieved the eighth grade level, there still remains a substantial untapped market for high school equivalency courses, if for no other motivation than better employment opportunities.

5.4 Program Content Requirement Estimates

We have no information on the subjects taken by adult basic education or high school equivalency students. We would assume that students in need of basic education or, to a lesser degree, those in need of a high school diploma, are not just enrolling in a particular subject area, but require instruction in all subject areas and need to progress through all of the courses required for certification. The use of video instruction in the home could be used as a supplement to or in lieu of classroom instruction. It must be kept in mind that, given the low educational level of these students, it is probable that their current income is relatively low and that most of them are therefore unlikely to have funds for investment in sophisticated video equipment either for education or for entertainment (with education as a "piggyback" use of the equipment). ITV programs developed for these user groups may have a sizable potential demand in terms of man-hours of use, but this demand will go unrealized if the students have to pay the costs of such courses.

Table 5-2 indicates that approximately 3.6 million persons in 1969 were enrolled in adult education courses in public and private schools (excluding colleges and universities). Table 5-3, from another source, would imply that nearly 500,000 of these were involved in adult basic education in 1969. That leaves close to three million persons (estimated from the surveys and in all likelihood this figure has increased since 1969) enrolled in adult education courses offered in 1969 by public or private schools which deal with subject areas other than basic education. In addition, three and one-half million were enrolled in some form of job training, and another two and one-quarter million were taking adult education courses sponsored by community organizations. A breakdown of enrollment patterns by subject area might prove helpful in anticipating demand for home ITV. For instance, persons taking courses related to leisure time activities or crafts may place as much value on the social contact with classmates as on the course content, and so would not be likely candidates for home-based video study. On the other hand, persons attending classes specifically to achieve accreditation of some kind might very well be interested in the greater flexibility allowed by ITV study at home or the convenience of not having to travel to a classroom, especially after coming home from a job.

A possible indication of the interest in adult education by subject areas is provided in the ETS report on non-traditional studies. This report's data on sources utilized for adult education, collected in 1972 from a nationwide random sample of nearly 2,000 adults, and also weighted for accurate representation, differ significantly from the findings of the 1969 Census survey. Whether substantial changes have occurred in the past three years, whether differences in research method or questionnaire wording are responsible, or whether one of the studies is largely inaccurate is indeterminable without a careful review of both. We have felt more comfortable quoting from the 1969 data, primarily because of the larger sample and well-established methods of the Bureau of Census. Nevertheless, the ETS study provides the only data we could obtain on adult education broken down by participation in different subject areas. ETS found that many more adults express an interest in some kind of further learning than report actually having received instruction: of the total weighted sample of 3,901 adults, 3,001 individuals indicate being interested in further learning while 1,207 individuals are actually engaged in learning. Table 5-4 indicates the distribution of subject content learning interests; Table 5-5 shows the frequency with which these subject areas were actually studied. (While the total sample is intended to approximate the total American population, it will be noted that the incidence of enrollment in basic education, for example, is higher than the 1972 estimate made by the Office of Education by several hundred thousand. It may be that all of the enrollment figures for the total sample cited here are somewhat inflated.)

These data point up the inadvisability of projecting actual demand from indications of interest. Within the 1972 enrollment percentages, however, it can be seen that the most popular areas of adult education are leisure activities, vocational subjects, and general education.

5.5 Interest in Credit and Location of Learning Activities

The ETS study further explored the public's interest in receiving credit for adult education. As Table 5-6 shows, there seems to be little concern for gaining formal credit for learning undertaken outside of full-time schooling. Because the study found nearly twice as much interest in credit as there was actual receipt of credit, it is not clear whether these low accreditation figures reflect inconsistency on the part of the respondents, or whether credit is not as widely available as would be desired. Whatever the case, it is not surprising to find that while only 33% of all enrollees received credit or certification, 61% of the enrollees in general education and 44% of those in vocational subjects received some kind of accreditation. In planning ITV programming for home use, then, we would expect those persons interested in pursuing academic or vocational subjects to want credit.

Finally, the ETS researchers considered the public's preferences of adult education learning sites. Learning sites seem to directly correspond to what is available. School system sites, including public and private high schools, vocational schools,

BEST COPY AVAILABLE

TABLE 5-4

CONTENT OF LEARNING INTERESTS
PERCENT OF THOSE INTERESTED IN LEARNING
(Weighted Total = 3001)
United States, 1972

	1 Interest in topic	2 First choice interest in topic
General education	48	13
Basic education	13	4
Biological sciences	8	1
Creative writing	13	1
English language	8	1
Great Books	11	0
Humanities	16	2
Languages	16	2
Physical sciences	6	0
Social sciences	9	1
Vocational subjects	78	43
Architecture	6	1
Business skills	26	9
Commercial art	12	2
Computer science	14	2
Cosmetology	10	2
Education	10	1
Engineering	9	2
Industrial trades	22	4
Journalism	4	0
Law	12	2
Management skills	16	3
Medical technology	10	2
Medicine	5	1
Nursing	13	4
Salesmanship	[illegible]	1
Technical skills	19	5
Agriculture	11	3
Hobbies and recreation	63	13
Crafts	27	3
Fine and visual arts	16	2
Flight training	11	2
Performing arts	14	2
Safety	16	0
Sports and games	28	2
Travel	22	2
Home and family living	56	12
Child development	17	4
Gardening	26	2
Home repairs	25	2
Sewing, cooking	27	4
Personal development	54	7
Investment	29	4
Occult sciences	7	0
Personal psychology	15	2
Physical fitness	26	1
Public speaking	11	0
Religion	15	3
Public affairs	36	5
Citizenship	4	1
Community problems	14	1
Consumer education	15	1
Environmental studies	15	1
Public affairs	12	0
Other topic	3	1

Source: Learning Interests and Experiences of Adult Americans. Pre-publication manuscript, Educational Testing Service, Berkeley, California, 1972.

TABLE 5-5

PERCENT OF ADULTS STUDYING VARIOUS TOPICS UNITED STATES, 1972

	Percent of All Respondents (Weighted total = 3910)	Percent of Active Enrollees (Weighted total = 1207)
General Education	8	25
Adult basic education	1	4
High school level courses	2	7
College level courses	3	11
Graduate level courses	2	5
Vocational Subjects	11	35
Technical and vocational skills	6	18
Managerial skills	3	10
Professional skills	3	9
Agriculture	1	3
Hobbies and Recreation	13	42
Safety	3	10
Hobbies and handicrafts	8	25
Sports and recreation	4	13
Home and family living	4	13
Personal development	4	11
Religion	4	14
Public Affairs	2	6
Citizenship	1	3
Civics and public affairs	1	4
Other topics	2	7

Source: Learning Interests and Experiences of Adult Americans, op. cit., 1972.

TABLE 5-6

CREDIT RECEIVED BY PARTICIPATION IN FIELD OF LEARNING PERCENT OF THOSE WHO PARTICIPATED IN LEARNING A FIELD

(Weighted Total = 1207)

		1 No formal credit (n_w=734)	2 Certif. satis. compl. (n_w=183)	3 Credit skill certif. (n_w= 81)	4 Credit h.s. diploma (n_w= 52)	5 Academic credit (n_w= 94)	6 Other, no response (n_w= 63)
All respondents	(n_w=1207)	61	15	7	4	7	6
Field of Learning							
General education	(n_w= 304)	33	12	5	16	28	6
Vocational subjects	(n_w= 422)	51	21	14	3	6	5
Agriculture	(n_w= 41)	77	0	13	0	0	10
Hobbies, recreation	(n_w= 505)	72	15	6	2	3	2
Home and family	(n_w= 161)	81	4	5	0	3	8
Personal development	(n_w= 138)	77	6	7	5	4	0
Religion	(n_w= 167)	72	11	5	4	3	4
Public affairs	(n_w= 77)	61	13	9	0	13	4

Source: Learning Interests and Experiences of Adult Americans, op. cit., 1972.

and colleges and universities at the two-year, four-year, and graduate levels, account for over a fourth (26%) of learning locations. The next most prevalent location is the home: 17% of the respondents participating in learning did so at home. Third most frequent as a learning location was the place of employment.

5.6 Viability of Billable ITV in the Home

It has been demonstrated that, even after the elimination of basic education for which federal subsidization has been allotted, there are substantial numbers of adults who are willing and able to pay for other types of courses. Given the variety of factors motivating enrollment in adult education courses (social contact as well as course content, for instance), it is difficult to predict what proportion of the adults enrolled in any one subject area would be likely to utilize video instruction if it were available for the same type of courses. It would appear that the demand for adult basic education would be low unless the cost of equipment and/or software is subsidized in some fashion. The demand for career and leisure-oriented courses is substantial, and adults are willing to pay for courses in local school systems or university extension programs. The response to another education delivery form, however, by persons currently enrolled in actual classes could range from apathy to widespread enthusiasm. Perhaps a better indication of minimum demand to be expected for home study courses using video-delivery systems is the current demand for home study courses based on written materials, i.e., correspondence courses. It would seem safe to say that, given comparable price structures, a good portion of those students currently enrolled in correspondence courses would be willing to utilize video delivery systems. To this basic demand, we could then add some portion of those adults currently enrolled in group study or formal adult education classes.

The data in Table 5-2 indicate that approximately one million adults were enrolled in correspondence courses in 1969, as estimated from the Census sample survey. Presumably this figure includes all those enrolled in private home study programs -

programs obtained directly from correspondence schools - and perhaps includes those enrolled in university-based correspondence courses as well. The figure of one million, however, is considerably less than the two million estimated by the National Home Study Council to be enrolled in private home study courses alone. A study conducted by the NHSC in 1970, directed to approximate the number of students engaged in home study education and training, is summarized in Table 5-7. Of the 900 organizations contacted by the NHSC, 355 provided information for the survey. The schools which responded reported a student body of 4,741,101 during 1970. Based on previous experience with the nonresponsive schools, the NHSC estimates another 277,529 students, bringing the national total to 5,018,630.

A brochure published by the NHSC lists more than 250 subject areas, ranging from accounting and agriculture through fashion design and turbine engine maintenance to zookeeping, as well as conventional high school subjects and college level courses. Subjects in occupational and vocational areas greatly outnumber those in other areas, however; and assuming that supply is responsive to consumer demand, it is likely that a majority of students are enrolled in career-oriented courses. These schools are, after all, private, profit-oriented companies which presumably expand most rapidly in profitable areas.

Given this rationale, and assuming that correspondence school students are likely candidates for ITV home study programs, potential demand for ITV from this consumer group is greatest in such areas as accounting and bookkeeping, air conditioning repair and maintenance, apartment house and motel management, automation, communications technology, computer programming and data processing, writing, transportation, and several other commercial areas.

From the limited information available, it is clear that students are willing to pay more than a nominal sum for correspondence courses from accredited institutions. Typically, the cost of courses from NHSC schools runs between $500 and $700; average length is 24 months.

084

TABLE 5-7
STUDENT BODY AND NEW ENROLLMENTS
HOME STUDY EDUCATION
United States, 1970

	1970 Student Body	1970 New Enrollment
NHSC member schools	1,630,128	649,913
Other private home study schools	220,069	140,579
Total private schools	1,850,197	790,492
Federal and Military	2,185,701	1,851,493
Colleges and Universities	312,592	234,212
Religious	323,720	307,717
Business and industry	68,891	43,671
TOTAL	4,741,101	3,227,585

Source: Independent Private School Industry: A State of the Art Study in the State of Illinois. Prepared for the State of Illinois Advisory Council on Vocational Education, 1973.

Adding together the demand for supplemental education manifest in enrollment in correspondence school courses and adult education classes, the area of career or vocational education seems to offer the greatest potential for ITV. Not only are there more students willing to pay for courses in these areas, but the top prices paid are probably higher per hour of instruction in these areas (excluding regular college or university education).

It must be noted again, however, that the demand for ITV which is realized in fact depends in part on the student's need for formal accreditation by the instructing institution (rather than by an independent professional examination board), and the institution's ability to provide credit. To the extent that career accreditation is by job performance or by independent examinations (e.g., FCC examinations for licensees), then to that extent ITV courses need only be recognized as qualitatively satisfactory by the student and not by the potential employers. If employers require examination and accreditation of students by recognized study institutions, and ITV is unable to provide such needs, then ITV may find that its more lucrative market is not in career education but, instead, in those areas in which personal development is the only student motivation.

SECTION VI

RECOMMENDATIONS FOR IMPLEMENTATION OF ITV

6.1 Introduction

The information we have gathered in compiling this report has led us to believe that the future of ITV lies primarily in the home, for even if secondary schools increase their ITV programs, they will probably remain a market that is too narrow to generate educational software both superior in quality and covering a wide range of subject matter--especially software in the area of career and vocational education.

In the next section we will provide cost information for total systems, including both hardware and software considerations. In this section we should like to focus on what exactly the government could do to stimulate and guide the implementation of ITV. But before we do so, we ought to first take into account the opinions of the producers we surveyed, for their experience may help in setting up guidelines for Federal policy. We should, at least, be aware of their attitudes about these matters, since they will be the ones who must be convinced that software generated for ITV in the home can be economically rewarding to them.

6.2 Need Analysis

Many producers stressed that speculations about a possible market for ITV in the home would never be confirmed unless they were funded in some manner for extensive market research studies and test marketing. Research and development for both hardware and software, therefore, can be seen as one of the initial steps in any planning for technological delivery of instructions or other social services.

We feel that widespread use of ITV can be accomplished in the next five years if a developmental program is designed and executed right away. Figure 6-1 illustrates a proposed program plan schedule for the implementation of the use of ITV by 1978. Because there is a high degree of interaction between specific efforts, a comprehensive program of this nature should be centrally administered. As outlined in Figure 6-2, this program planning schedule encompasses four major developmental areas: research, funding, testing, and actual implemenation.

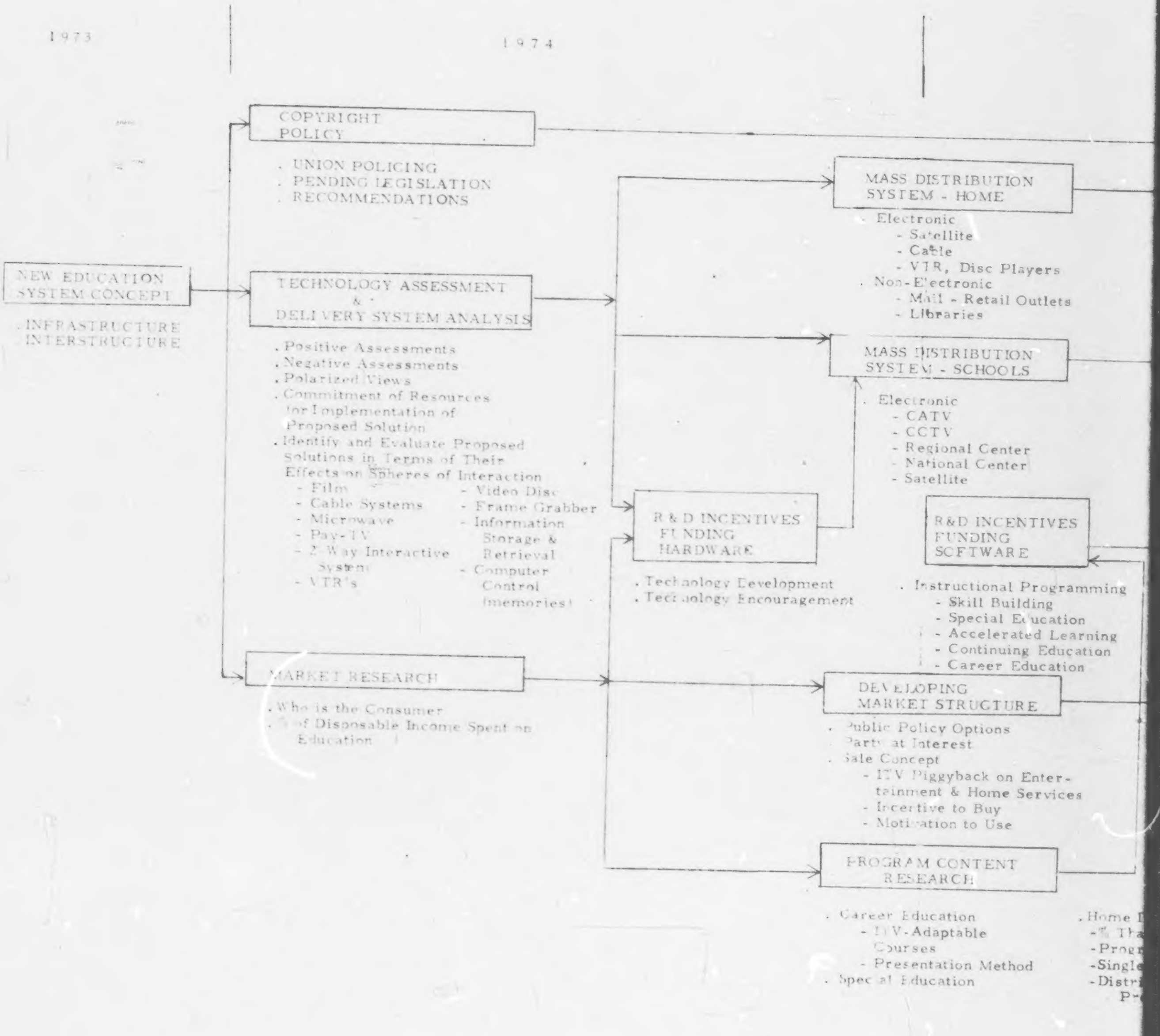
6.2.1 Research Efforts

Initial research studies will serve to define the first areas of policy action. A technology assessment and delivery system analysis should identify the specific media and delivery systems to be used for ITV. A clear identification of an optimum system is imperative at an early stage so that the commitment of resources for the rest of the program is not misdirected. Market research will provide a profile of the ITV user and, by determining the percentage of disposal income spent on education, will give some indication of the size of the market for ITV programming. In addition, research on program content is needed to determine subject areas that will generate wide interest and usage. At the same time that technology assessments are made and market and content research conducted, copyright legislation should be examined and policy recommendations made so that nationwide distribution and use of programs can be accomplished without the removal of producers' rights. These research efforts are scheduled for the first year of the project.

6.2.2 Funding

Hardware manufacturers and software producers must be funded so that an incentive is provided for research and development in ITV applications. The program content research conducted in the first year will have furnished directives for the areas in which software production should be encouraged. Similarly, the assessment and analysis of delivery systems will have identified the technology to be encouraged and the hardware to be developed. Commitment of funds for hardware development should make possible the establishment of the necessary mass distribution system, with equipment in homes as well as in some schools, during the second year of the project.

BEST COPY AVAILABLE


1973
1974
NEW EDUCATION SYSTEM CONCEPT
. INFRASTRUCTURE
. INTERSTRUCTURE
COPYRIGHT POLICY
. UNION POLICING
. PENDING LEGISLATION
. RECOMMENDATIONS
TECHNOLOGY ASSESSMENT & DELIVERY SYSTEM ANALYSIS
. Positive Assessments
. Negative Assessments
. Polarized Views
. Commitment of Resources for Implementation of Proposed Solution
. Identify and Evaluate Proposed Solutions in Terms of Their Effects on Spheres of Interaction
- Film
- Cable Systems
- Microwave
- Pay-TV
- 2-Way Interactive System
- VTR's
- Video Disc
- Frame Grabber
- Information Storage & Retrieval
- Computer Control (memories)
MARKET RESEARCH
. Who is the Consumer
. % of Disposable Income Spent on Education
MASS DISTRIBUTION SYSTEM - HOME
. Electronic
- Satellite
- Cable
- VTR, Disc Players
. Non-Electronic
- Mail - Retail Outlets
- Libraries
MASS DISTRIBUTION SYSTEM - SCHOOLS
. Electronic
- CATV
- CCTV
- Regional Center
- National Center
- Satellite
R & D INCENTIVES FUNDING HARDWARE
. Technology Development
. Technology Encouragement
R&D INCENTIVES FUNDING SOFTWARE
. Instructional Programming
- Skill Building
- Special Education
- Accelerated Learning
- Continuing Education
- Career Education
DEVELOPING MARKET STRUCTURE
. Public Policy Options
. Party at Interest
. Sale Concept
- ITV Piggyback on Entertainment & Home Services
- Incentive to Buy
- Motivation to Use
PROGRAM CONTENT RESEARCH
. Career Education
- ITV-Adaptable Courses
- Presentation Method
. Special Education
. Home I
-% Tha
-Progr
-Single
-Distri
P-

BEST COPY AVAILABLE

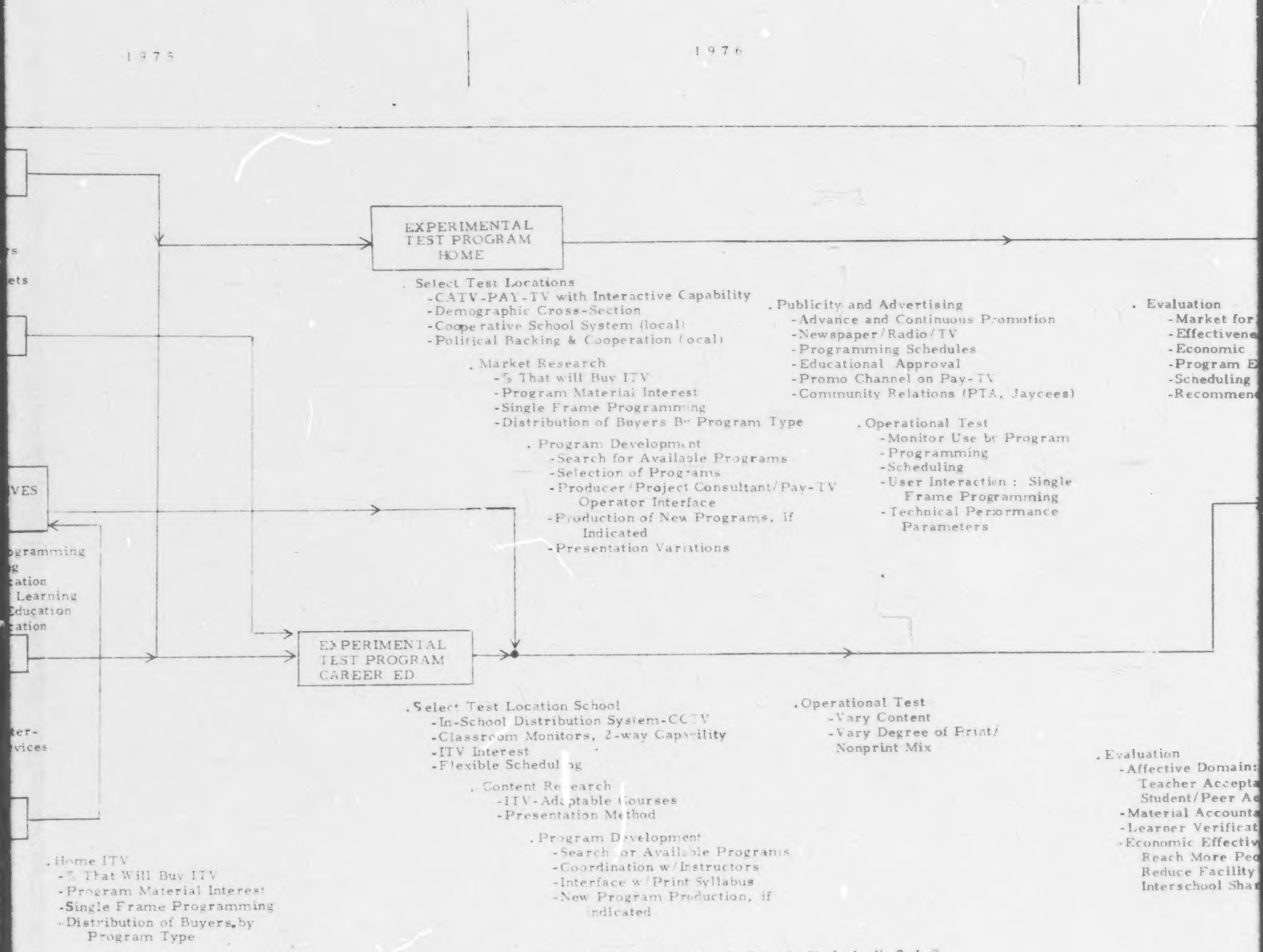
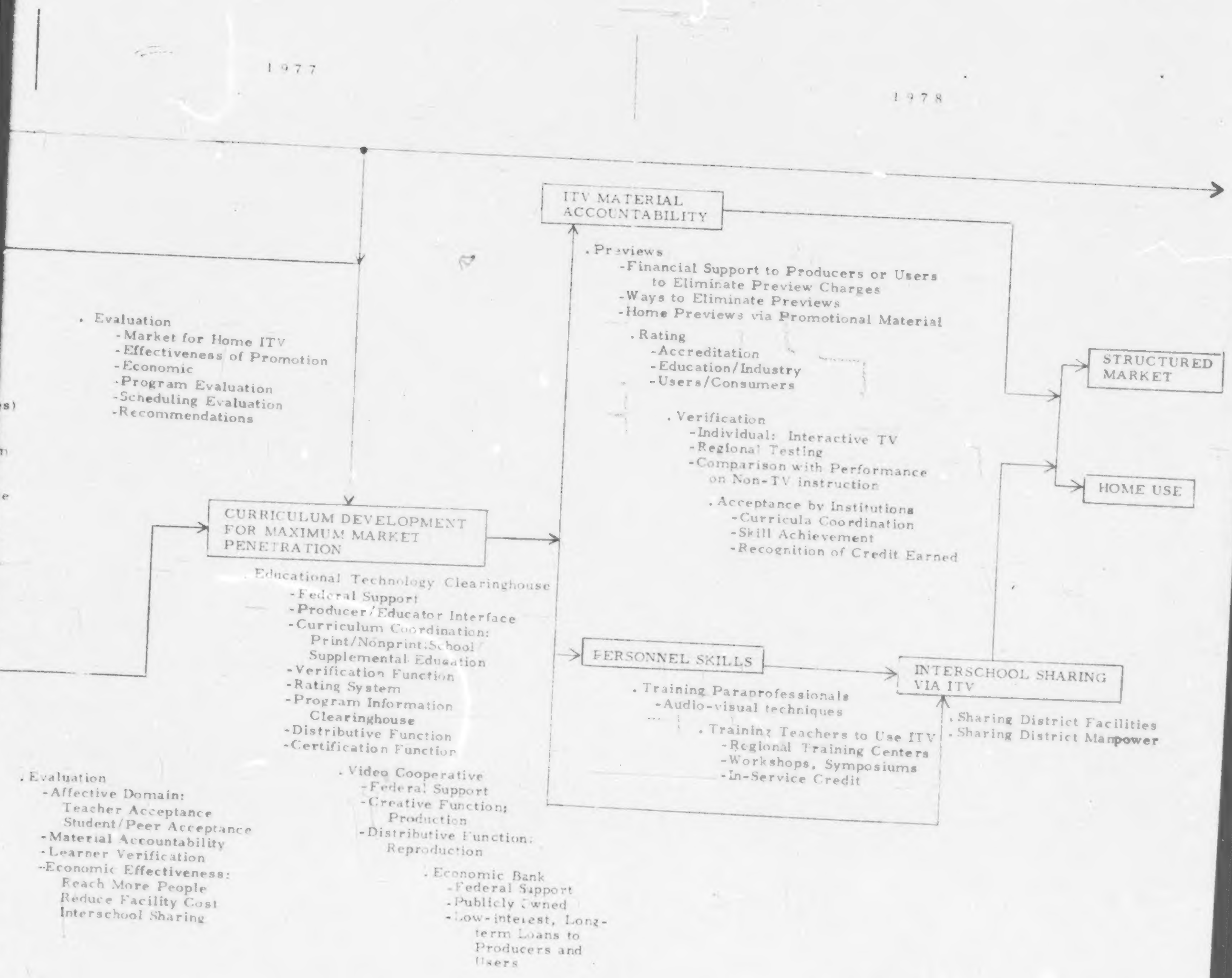

1975
1976
rs
ets
EXPERIMENTAL TEST PROGRAM HOME
. Select Test Locations
-CATV-PAY-TV with Interactive Capability
-Demographic Cross-Section
-Cooperative School System (local)
-Political Backing & Cooperation (ocal)
. Market Research
-% That will Buy ITV
-Program Material Interest
-Single Frame Programming
-Distribution of Buyers By Program Type
. Program Development
-Search for Available Programs
-Selection of Programs
-Producer/Project Consultant/Pay-TV Operator Interface
-Production of New Programs, if Indicated
-Presentation Variations
. Publicity and Advertising
-Advance and Continuous Promotion
-Newspaper/Radio/TV
-Programming Schedules
-Educational Approval
-Promo Channel on Pay-TV
-Community Relations (PTA, Jaycees)
. Operational Test
-Monitor Use by Program
-Programming
-Scheduling
-User Interaction : Single Frame Programming
-Technical Performance Parameters
. Evaluation
-Market for
-Effectivene
-Economic
-Program E
-Scheduling
-Recommen
IVES
ogramming
g
cation
Learning
Education
cation
ter-
vices
EXPERIMENTAL TEST PROGRAM CAREER ED
. Select Test Location School
-In-School Distribution System-CCTV
-Classroom Monitors, 2-way Capability
-ITV Interest
-Flexible Scheduling
. Content Research
-ITV-Adaptable Courses
-Presentation Method
. Program Development
-Search for Available Programs
-Coordination w/Instructors
-Interface w/Print Syllabus
-New Program Production, if indicated
. Operational Test
-Vary Content
-Vary Degree of Print/ Nonprint Mix
. Evaluation
-Affective Domain:
Teacher Accepta
Student/Peer Ac
-Material Accounta
-Learner Verificat
-Economic Effectiv
Reach More Peo
Reduce Facility
Interschool Sha
. Home ITV
-% That Will Buy ITV
-Program Material Interest
-Single Frame Programming
-Distribution of Buyers by Program Type

Figure 6-1 5-YEAR NEED ANALYSIS

BEST COPY AVAILABLE


1977
1978
ITV MATERIAL ACCOUNTABILITY
STRUCTURED MARKET
HOME USE
CURRICULUM DEVELOPMENT FOR MAXIMUM MARKET PENETRATION
PERSONNEL SKILLS
INTERSCHOOL SHARING VIA ITV

. Evaluation
  -Market for Home ITV
  -Effectiveness of Promotion
  -Economic
  -Program Evaluation
  -Scheduling Evaluation
  -Recommendations

. Previews
  -Financial Support to Producers or Users to Eliminate Preview Charges
  -Ways to Eliminate Previews
  -Home Previews via Promotional Material

. Rating
  -Accreditation
  -Education/Industry
  -Users/Consumers

. Verification
  -Individual: Interactive TV
  -Regional Testing
  -Comparison with Performance on Non-TV instruction

. Acceptance by Institutions
  -Curricula Coordination
  -Skill Achievement
  -Recognition of Credit Earned

. Educational Technology Clearinghouse
  -Federal Support
  -Producer/Educator Interface
  -Curriculum Coordination: Print/Nonprint;School/Supplemental Education
  -Verification Function
  -Rating System
  -Program Information Clearinghouse
  -Distributive Function
  -Certification Function

. Video Cooperative
  -Federal Support
  -Creative Function: Production
  -Distributive Function: Reproduction

. Economic Bank
  -Federal Support
  -Publicly Owned
  -Low-interest, Long-term Loans to Producers and Users

. Evaluation
  -Affective Domain: Teacher Acceptance Student/Peer Acceptance
  -Material Accountability
  -Learner Verification
  -Economic Effectiveness: Reach More People Reduce Facility Cost Interschool Sharing

. Training Paraprofessionals
  -Audio-visual techniques

. Training Teachers to Use ITV
  -Regional Training Centers
  -Workshops, Symposiums
  -In-Service Credit

. Sharing District Facilities
. Sharing District Manpower

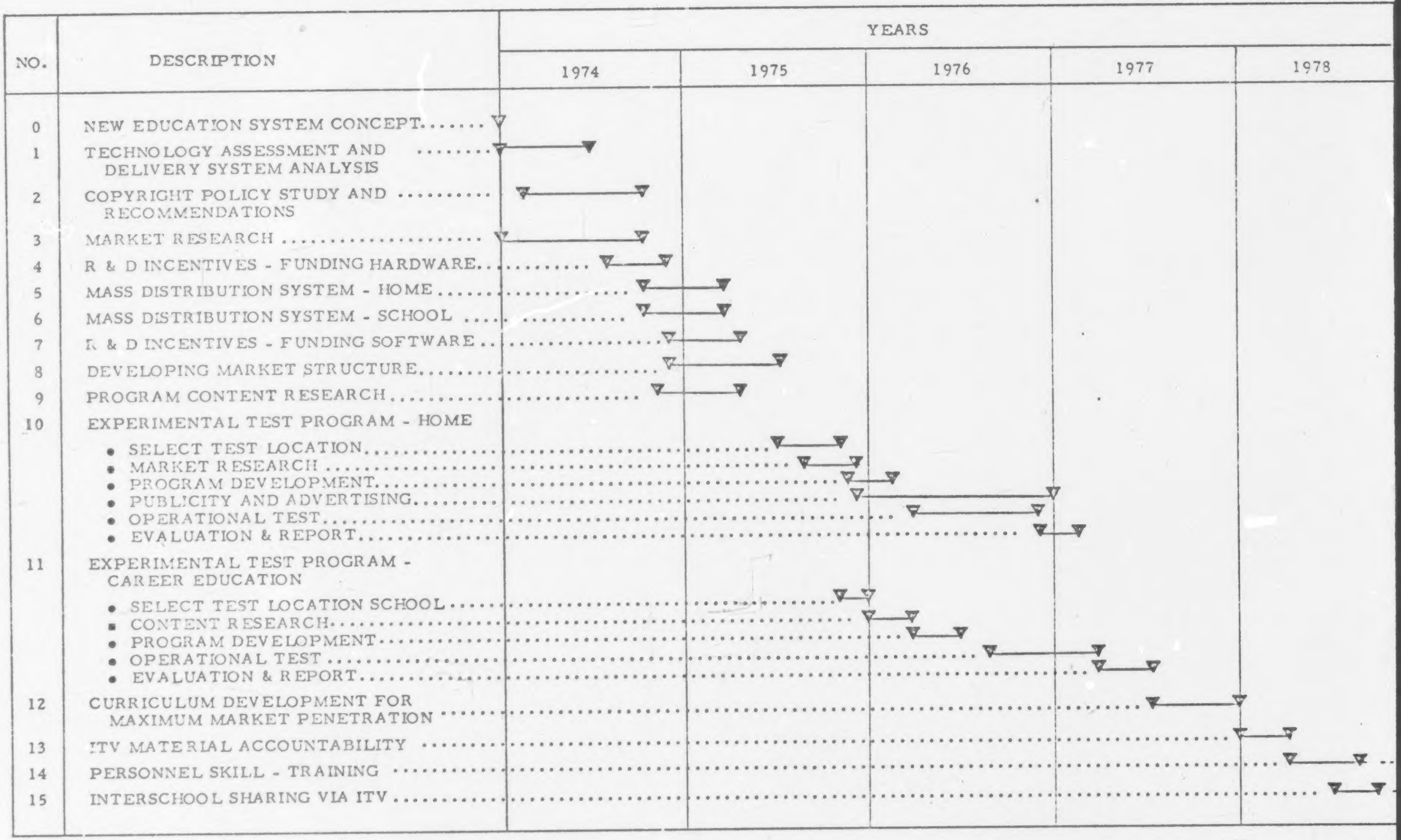


Figure 6-2 ITV 5-Year Need Analysis

6.2.3 Testing

By the third year, mass distribution capability for the optimum delivery system identified in the technology assessment should be established in some areas and be on its way in other areas. In some locales, full system capability should be available. Production of instructional programming should be underway in those areas - skill-building, special education, continuing education, career education, or accelerated learning - indicated as saleable by market and program content research. During the third year an experimental test program should be conducted both for home use and for use in career education at the secondary school level. Test program locations are selected on the basis of the existence and operation of an optimum delivery system, as well as the interest and cooperation of community and educational personnel.

The home-use test program is designed to evaluate the market for home ITV in terms of program content, program scheduling, and program format (continuous vs. fixed-frame format, one-way viewing vs. interactive viewing). In addition, an economic analysis of the purchase of ITV programs should establish the most viable areas for future production ventures as well as the most efficient method of billed distribution - ownership, rental, subscription, monthly billing, or pay-as-viewed. On the basis of the test program, recommendations can be made for implementing home use of ITV on a nationwide scale.

The career education test program should serve to indicate the ideal mix of printed learning materials with audio-visual materials. Teacher acceptance of ITV will be determined, as will student acceptance of ITV, on individual as well as classroom levels. The in-school test program allows for verification that ITV programs do instruct effectively, for student performances under ITV and non-ITV instruction should be measured.

Finally, the economic effectiveness of the use of ITV within school systems to reach more students while reducing manpower and facility costs should be evaluated.

6.2.4 Implementation of ITV Use Nationwide

Efforts to follow the experimental testing should be concentrated in the area of curricula development, with the goal of defining and producing programs for maximum market penetration. For this purpose, a Federally supported Educational Technology Clearinghouse might be established. On a national level, such an institution would interface with regional and local educational and industrial organizations. In the formative stage of the national clearinghouse, contact would be very close with organizations already operating in curricula development on a smaller scale. Once established, its functions should include the coordination of supplementary education curricula with public school, university, and industy programs, as well as the coordination of print and video materials used in home and in schools. The clearinghouse would also rate and verify ITV programs, accredit programs, maintain a program library and information clearinghouse on available programs, and possibly serve as a central point for program distribution. Most importantly, however, it should facilitate an exchange of information between educators and program producers. Without this exchange, curricula coordination would be ineffectual.

To achieve extensive production of instructional programming by 1978, it may be necessary to create financial incentives for independent producers. A professional cooperative, formed with government support for the express purpose of ITV production, might encourage independent producers to concentrate on educational programming. Besides its creative function, a video cooperative could also aid in mass production and distribution by providing the facilities necessary for the reproduction of program masters.

If the production or purchase of ITV programs proves too costly for the prompt development of widespread use, the Federal government may have to provide direct support to producers and/or users for a time. However, the practice of billing viewers for use of ITV programs should eventually make the industry self-sufficient. Therefore, Federal aid should not be required on a long-term basis.

Another area to be covered in the five-year schedule for implementation of ITV is material accountability. ITV material may be evaluated by educators and students, who rate programs according to instructional content. Another evaluative approach is that of learner verification - demonstration that the material does in fact instruct - either by testing at regional and local centers or through interactive TV. Evaluation and verification of ITV programming should lead to accreditation for coursework completed with ITV. Acknowledgment for completion of ITV work could be given as credit or placement in schools, universities, or in employment situations.

6.3 Market Development Time

If delivery system equipment is installed in most homes, extensive use of home ITV may be achieved by 1978. Truly integrated use of ITV in school curricula will probably not be so widespread in five years. There are certain factors specific to the institutional education marketplace which inhibit the regular purchase and use of new products. This educational market is stratified not only by its structural and organizational framework, decision-making channels, and requirements for materials, but also by the finances and politics on the state, regional, and district levels. The basic needs of one particular state or area will not necessarily be similar to those of another. The interviews we conducted as part of this study have shown us that we cannot expect ITV to be uniformly implemented over a wide range of learning areas.

Once there has been a field evaluation of product effectiveness, video technology can be more efficiently marketed than heretofore has been the case. The cyclical nature of school purchasing should be understood as well as the slow-moving process of introduction and use of new educational products. Traditionally, schools do not buy new materials in the summer months, a custom that places inventory and delivery burdens on suppliers. Marketing educational products requires both the ability to accommodate short-term supply and demand as well as persistence.

For example, 16 mm film, now the biggest seller in educational A-V materials, was available long before its use became widespread. The HOPE report on A-V in Education (1971) suggests that ten years is not an uncommon span of time for the delivery of a new product (from initial research to first sales), and that a typical gestation period from concept to marketing breakeven is approximately three years.

In view of the special nature of the educational marketplace, then, a five-year schedule for implementation of ITV in schools on a large scale seems overly ambitious. However, if audio-visual personnel trained in techniques for use of video technologies are available in schools as advisors, and if teachers receive training in the use of ITV in classroom instruction, it can be expected that five years from now school districts will be utilizing video at least as part of cooperative educational services such as the exchange, storage, and retrieval of information, or the sharing of personnel and facility resources.

6.4 Possible Roles of the Government in Implementing ITV

Using the five-year planning schedule as a guideline for structuring our recommendations, we distinguish three different areas of concern with regard to the Federal government's role in implementing Instructional Television:

- clearinghouse function
- economic support function
- copyright clarification.

6.4.1 Clearinghouse Function

The Federal government already plays an important role in this area. To facilitate information exchange in the field of instructional technology, the Office of Education sponsors the Educational Resources Information Center Clearinghouse at Stanford University. Founded in 1964, this clearinghouse organizes and disseminates information on instructional films, television, programmed instruction, computer-assisted instruction and other audio-visual teaching aids. The Office of Education also provided support for the founding of the Educational Products Information Exchange Institute in 1966. EPIE, in its own words, "gathers and disseminates information about the performance and the effectiveness of learning materials, equipment, and systems," so that educational consumers may select products best suited to the needs of learners. A third organization, funded by O E and scheduled to terminate at the end of 1973, is the Technical Applications Project. TAP has functioned to catalog instructional systems, both print and nonprint, and to establish a national dissemination network.

While such efforts are steps in the right direction, the newly-formed Agency for Instructional Television comes much closer to fulfilling the functions we envision for an "Educational Technology Clearinghouse." AIT, of which the National Instructional Television Center has become a division, is anticipating research efforts leading to a major interstate and interprovincial project in the U.S. and Canada next year. Since its creation, AIT has held regional meetings to give state and provincial education and communication authorities and other interested agencies a voice in the selection and direction of AIT projects. These meetings, which will be reconvened annually, included chief school officers, other high education officials, school superintendents, curriculum supervisors, classroom teachers, educational broadcasters, and representatives of national professional education associations. We think that AIT should make a valuable contribution in the coordination of educational needs with the new technologies for social service delivery, and it is in the interest of software producers to cooperate with organizations such as AIT.

Any future organizations of this nature should, of course, continue to be administered independently of the interests of hardware manufacturers, and should be able to perform required evaluations regardless of changes in existing and developing technologies.

6.4.2 Economic Support Function

There are several means by which the Federal government could provide start-up incentives for increased production for and use of Instructional Television. One obvious way is to supply producers directly with funds for research and development, to be followed by hardware and software production. Another means, mentioned earlier, could be the establishment of a Federally supported video cooperative of independent producers. For example, the

National Film Board of Canada maintains a cooperative for the production of its series, "Subject of Change," a continuing sociological commentary on urban and environmental problems. A cooperative venture of this sort would provide funds for groups of professionals - producers, artists, writers, technicians - to work together on specific program assignments. It might also maintain facilities (as does an existing company) for transfer to alternate format and reproduce finished programs for mass distribution.

Other possible avenues of Federal support for ITV include: a loan bank, possibly publicly-owned, to provide long-term, low-interest loans to producers and users; provision for tax breaks for producers of instructional materials; subsidization of market research tests and test marketing to determine the kinds of programs consumers would pay for if available; subsidization of software distribution costs, such as providing funds to producers or users so that programs may be previewed at no cost to either group; financial encouragement, such as advertising, to system operators for scheduling educational programs; or the establishment of a voucher system by which users might have vouchers to pay for reception of instructional programming.

6.4.3. Copyright Clarification

Federal policy in the area of copyright law can greatly encourage or greatly inhibit the production of instructional programs. Existing legal and union structures protect producers to some degree in the case of instructional programming received via television and paid for on a subscription or rental basis. However, there are usually well-defined restrictions on the period of use allowed, and educators complain that the costs for what seems to them to be severely limited use of software prohibit adequate ITV offerings. Hence, taping material off-the-air illegally is common practice. One educational broadcaster suggested that a sliding rental price scale (Encyclopedia Britannica has been experimenting with this concept), based on the frequency and length of use of programs, would be acceptable to producers and educators alike.

Nevertheless in the case of instructional programs which are purchased and retained by the user, especially with regard to newer products such as video cassettes and video discs, the prerogatives of the purchaser regarding duplication or even re-broadcast of the program are vaguely defined and virtually unenforceable. The "Fair Use" paragraph incorporated in the copyright revision currently being considered would make the realm of authorized use of purchased video programs even more ambiguous. Producers fear that passage of this copyright revision would result in the loss of royalties and replay revenues. Educators claim that they cannot afford quality programming, and are hoping that the copyright revision will be passed; meanwhile, they continue to tape off-the-air and play back programs illegally. Regulation of the use of program materials is a difficult problem, one which directly affects producers and users; all agree that the copyright situation should be cleared up with regard to the different distribution systems that will bring ITV into the home and the school.

6.5 Redeeming the TV Set

It certainly requires no special acumen to realize that television has had an enormous impact on American society during the past twenty-five years. There are very few homes in the United States that don't have at least one television set. Yet what precisely has been the effect of television on American society? If asked to answer this question, we imagine that most educators, television critics, and other leading professional figures in American life would lean towards the negative, saying that television is mindless, puerile, narrow, and superficial, or that television has not fulfilled its potential role of making the American public more knowledgeable about life in general or about particular issues. Even among so-called "middle Americans" we find a certain defensiveness about watching television. Many people do not like to admit that they spend several hours in front of the television set every day. And many people - not only intellectuals and educators - refer to the television set as "the boob tube," "the idiot box," or "the one-eyed monster." And every year television critics agonize over the new programs, which seem to outdo the preceding year's programs in banality and tastlessness.

Recently there has been a spate of books on the role and nature of television in American society - books that deal with the question of the news and television, the presidency and television, children and television, and the socio-legal status of television. In part these books have been generated by the rise of new distribution systems that are contending with the over-the-air networks for the television market. But they have also been generated by the rise of consumerism in American society. Many people have become concerned about the products they buy; and what they receive over their television sets is clearly a product of sorts.

Television of course has always had its detractors, but perhaps some of these complaints about the quality of television are unreasonable. Why should television educate rather than entertain people? (Why the suspicion that entertainment cannot be educative?) Why should people be force-fed high-quality programs that they find boring? There have always been heated arguments about what should go over the limited over-the-air channels, and these arguments will never be resolved. Meanwhile the major networks will probably always produce entertainment that is aimed at the widest possible audience, in order to attract the greatest amount of advertising revenue. But now, thanks to the advent of new kinds of distribution systems, the television set will be able to handle a greatly expanded number of channels, so that a very wide spectrum of programs can be offered. Thus the debate can be resolved about what kinds of programs should be received on the television set: all kinds! The greatly increased channel capacity will open up enormous possibilities for the television set, making it much more responsive to the needs of American society than it has been.

Not only will television be able to provide basic services in health care, crime control, and shopping, but it will also be able to provide educational services. We think that there definitely is a market for instructional television in the home, and that this market could prove a lucrative one. Moreover it would be one that would only require a limited amount of government investment to get it going. We agree with the Carnegie Commission report that "although . . . federal resources must be available for the encouragement of development in instructional technology, we do not consider it desirable or wise for the federal government to dominate such endeavors." The federal government can stimulate the development of ITV in the home without becoming burdened by large financial outlays. If, as we foresee, ITV in the home will be a significant factor in American education in the near future, then the television set will no longer be regarded with disdain by many Americans. It will be a sophisticated and flexible instrument for educating as well as entertaining many Americans.

APPENDIX A

SUMMARY AND TABULATION OF INTERVIEWS

A.1 Summary of Interviews

The conclusions set forth in this synopsis are based to a large degree on a series of in-depth interviews conducted with individuals who are, in various ways, interested in developments in the field of instructional television, whether from a standpoint of commercial production, education, or experience in ITV applications.

The groups of producers interviewed includes representatives of major companies in the cable-TV, Pay TV and audio-visual fields, among them RCA, Teleprompter, Athena Communications, McGraw-Hill, and Time-Life Video. This group was able to describe the development and marketing of delivery systems as well as explain the economic factors affecting the development of markets for hardware and software.

In order to get an indication of current implementation of video technologies in secondary schools, personal interviews were conducted with faculty, administrators, and ITV directors in several high schools in New Jersey and Pennsylvania. In addition, a limited number of self-administered questionnaires were mailed to corresponding personnel in selected schools in Minnesota, Colorado, Hawaii, and Illinois.

Most of these schools, particularly those to which questionnaires were mailed, may be characterized as innovative and progressive, especially in their attempts to make use of technology. Although these schools basically support ITV, some of them are unable to fully develop their ITV programs because of budgetary problems. On the other hand, several of the schools in the sample may be viewed as "average" high schools. An attempt was made to assess the strengths and weaknesses of ITV in school systems that exhibit an active commitment to innovation as well as in school systems that (whether for financial or attitudinal reasons) maintain a more tentative or even negative stance toward ITV.

A.2 Summary of Interviews with Producers

Interviews conducted with several important producers in the field of telecommunications support our suggestion that the market for instructional television lies in the home, not in the school. Promoting ITV in the schools would be an extremely high-risk business, producers say, because educators do not know how to exploit the advantages of ITV and do not have the time, money, or interest to learn how to do so. Unfortunately there is a wide gulf between producers and educators - many producers regarding educators as locked into traditional methods of teaching that are unfruitful and boring, many educators regarding producers as glib technicians who are unacquainted with the complexities of traditional humanistic disciplines. Whatever the reasons for this mutual distrust, producers do not believe there will ever be a substantial market for ITV in the school, though some suggested that the government fund them for demonstrating the advantages of ITV to educators. All the producers who were interviewed said that there was a much greater chance for ITV to develop in the home as a spin-off from the entertainment industry. Moreover, in the home ITV could fulfill certain functions that in-school programs cannot handle very well.

The producers, however, were not especially optimistic about development of ITV in the home in the near future. With one exception, all wondered if there could ever be a home educational market substantial enough to attract producers. All the producers, though, admitted that they did not have enough data to assess this possible market carefully, and they did not have sufficient financial resources to enable them to devote time to collecting this data. Their market research effort is minimal. Every producer complained about the lack of financial investment necessary to explore and possibly create a market for educational software in the home. Because they do not know the outlines of such a market, they prefer to avoid the risks of producing software for ITV in the home and keep their operations geared to entertainment.

Given the fact that the necessary hardware for ITV in the home will have been purchased for entertainment purposes, the key question is: what kind of educational software will appeal to the largest number of people? Most producers mentioned how-to courses, believing that a wide variety of people are interested in learning how to fix, do, and make things themselves, both for the enjoyment of working with their hands and the possibility of saving money. Many producers thought that there might be a market for vocational education as well as one for career guidance. Some producers mentioned that ITV in the home would be excellent for specialized educational programs directed to advanced students, retarded students, and handicapped students. ITV could function as a kind of tutoring service, presenting programs that would not be financially feasible for any one school to offer. By accepting ITV in the home, then, schools could limit their expenditures in some specialized areas. If schools were aware of this possibility, they might be amenable to giving these programs certification and accreditation. Most producers stressed that unless programs were certified or accredited it would be difficult to create a market for ITV in the home.

Some producers speculated that there might be a larger market for ITV in the home than heretofore realized, in that ITV might attract many users who feel the need for some kind of self-improvement course yet feel embarrassed about admitting this need. ITV in the home might also attract those people who dislike schools, either because they have had bad experiences with individual teachers or because they are uncomfortable competing with other students in a classroom situation.

Many producers stressed that these speculations about a possible market for ITV in the home would never be confirmed unless the government in some way funded them for extensive market research studies. Most producers welcomed federal subsidies in this area, as well as subsidies to educators so that they could spend time devising ITV software. All the producers supported the idea of an economic bank, which would give loans to schools for research and development of ITV software, to users to pay for the software, or to producers to do market research. Aside from loans, many suggested that the government offer favorable tax breaks to producers or better rate increases as an incentive for the production of educational material. Some producers were also in favor of a central clearinghouse where ITV software could be evaluated and easily distributed in order to minimize problems of access. All the producers, however, emphasized that the federal government should not produce programs. In general, despite their acceptance of a government supported economic bank or clearinghouse, producers were wary of government interference in the telecommunications industry, and were fearful that the government might so regulate the market that the market would, in effect, be strangled.

Though most producers were in agreement about what the government could and could not do in structuring a market for ITV in the home, they disagreed considerably on the question of copyright laws. Some saw the present confused copyright situation merely as a nuisance whereas others suggested that unless copyright laws were clarified and strictly enforced, producers would have no incentive to enter the ITV field. As possible solutions, some mentioned a sliding pay scale based on extent of use of programs which might be acceptable to both distributors and users. Another approach is that of charging non-profit prices for use of educational programming. In any case, most producers agree that the copyright situation should be clarified with regard to the different delivery systems that might be available for ITV in the home.

The particular delivery system that the user might employ did not seem a question of major importance to the producers. They all thought that some kind of delivery system would be in the home for entertainment purposes in the next ten years, and any software made for one medium could easily be converted to another medium. The key question was billing - how to make sure the user pays for the particular material. Some producers believed that the video disc would be the easiest system to market and to bill, and also a system unlikely to be overburdened with federal regulations. But they all added that the delivery system was less important than a knowledge of the potential market for ITV use in the home.

Aware that many educators are not interested in ITV, and unclear about the market for ITV in the home, producers at present are reluctant to invest in this field unless it is definitely shown that a market will exist. Most producers implied that if a definite market were available, there would be the necessary inflow of talent, technology, and organization to create high-quality ITV software for home use.

A. 3 Summary of Interviews with Users

In our interviews with users of ITV in secondary schools, we came up with clear-cut evidence to support the contention that ITV should be promoted in the home rather than in the school. Although the schools we surveyed were in various locations throughout the United States and differed widely in the size of their enrollments and their per-pupil expenditure on audio-visual materials, without exception educators stressed one key point: it would be very difficult to promote wide-scale implementation of ITV in schools without large sums of money being invested by the federal government. Every individual interviewed - even those at the most innovative schools - complained about the lack of money available both for hardware and software and for the support of a professional technical staff to provide and maintain media services and to train teachers in making better use of ITV in their courses.

Even if a great deal of money were forthcoming, at every school another factor that would limit the potential effectiveness of ITV in the schools was mentioned: teacher resistance. Some of the media specialists were optimistic that they could dispel whatever doubts teachers had if there were time and staff to educate teachers more fully about the advantages of ITV. Teacher resistance to ITV, though, is an intangible factor that is difficult to assess adequately. The teachers interviewed were clearly less enthusiastic than the media specialists about ITV, possibly because teachers are in the position of assessing a finished product - what they actually see - rather than anticipating a potential product. Some teachers complained about the impersonality of televised instruction; others cited the poor quality of many available programs. In the typical situation of limited channel capacity on the particular delivery system, difficulty with scheduling becomes another major problem that makes teachers disenchanted with ITV and prevents its optimum utilization.

Further, teachers might not have wanted to admit their deeper fears about automation, or their distrust of any kind of complex electronic equipment which might threaten their position in the classroom. One media specialist suggested to us that ITV as it exists now is not of great help to teachers, and that in addition many teachers felt a certain disdain for the supposedly "middle-brow" and "lowbrow" world of television, as opposed to the "highbrow" world of books.

In spite of budget limitations and teacher resistance, ITV has been modestly successful in schools. Not only media specialists but also teachers and administrators stressed that student response to ITV has definitely been favorable. Having grown up watching television in their homes, many students do not feel threatened and overwhelmed by difficult material that is presented over television, whereas these feelings may arise when similar material is presented to them in books. For these students television means entertainment; it is part of their everyday world, and not something imposed on them by teachers. Most teachers said that students absorb information more readily from television than from books, especially those students with reading deficiencies. Many teachers also emphasized that ITV enabled them to offer specialized or sensitive material that lay outside their areas of competence. ITV programs also serve in some cases as surrogate field trips, giving students the opportunity to see places they could never visit. Thus ITV can and does offer a wider range of material than could ever be presented by the teachers themselves.

ITV in the schools, then, is here to stay; its impact may not have been strong, but it clearly has altered the landscape of secondary education. It has not replaced teachers; rather, it has enabled them to develop more flexible and more interesting curricula than was possible in the past. Most educators we interviewed were definitely optimistic about the future growth of ITV, yet they were also aware that it would be difficult to expand ITV in the schools. (One school system - in Hagerstown, Maryland - that relies extensively on ITV has, in fact, actually cut back its program and is giving the teachers more time in the classroom.) Several educators saw a great future for ITV in the home, though they were rather vague about how ITV in the home should be implemented. One educator suggested that by promoting ITV in the home, schools could bypass the problem of huge investments in hardware, since the necessary hardware will have been bought by the potential user for entertainment purposes. Another suggested that teachers would not feel threatened by the development of ITV in the home, since it obviously could not replace their role in the classroom.

A.4 Instructions for Reading Tabulations

For both questionnaires, total mentions for each question are shown as numerals in the left margin. Individual responses are identified alphabetically by separate lower-case letters, or separated by semi-colons.

It should be kept in mind that these questionnaires served primarily as topic guides for in-depth interviews. In some cases, there were questions which were not applicable to the particular situation. In other cases, time constraints prevented question-by-question interviewing. Finally, there were some questions which simply were not answered - noticeably, school budget breakdowns were not offered by respondents. As a result, the number of responses to any given question may not equal the total number of respondents interviewed.

INSTRUCTIONAL TELEVISION

PRODUCER QUESTIONNAIRE

1. INTERVIEWER: ____________
2. COMPANY NAME: ____________
3. LOCATION: ____________
4. DATE: ____________
5. PERSON INTERVIEWED: ____________
6. RESPONSIBILITY AND TITLE: ____________

As our letter of August 1, 1973 informed you, we are performing an investigation for the United States Department of Health, Education and Welfare on the attitudes of the producer's of Educational Programs for use in Instructional Television Systems, specifically for the secondary and vocational school systems. I would like to ask you (and other personnel within your organization) some questions about your current and planned programs, and your suggestions for federal actions that can support the industry which you are involved in. In order to maintain the anonymity of our respondents, we will not, under any circumstances, release information that connects the identity of an individual with responses to specific questions.

1. What are the specific types of business ventures that your company is engaged in? Do they fit in the following classes?

	Class	Type of Company	Relationship to Educational ITV Market
1	a	Publishing	8, 16, 35 mm feature films
3	b	Network	print materials
4	c	CATV Company	both Pay TV and CATV approaching educational market
5	d	Record & Tape	local originators; some tape ventures in educ.
0	e	TV Set Producer	
1	f	Equipment Manuf.	
2	g	Educational	our primary market
4	h	Entertainment	feature films
3	i	Film Producer	shown on ETV for teacher training; local origination programming on cable;
3	j	Other (specify): -Over-the-air Pay TV -Microwave -acquire and distribute finished productions -Duplication and distribution	

2. Can you describe your current and planned productions in terms of uses and applications?

Current	Uses & Applications
a. Public Relations Documentaries	client use
Educational Religious Films	Religious education
Educational Films	School assemblies, conventions
b. home Pay TV	Entertainment
c. Tapes, Films, records, CATV and Pay TV	Entertainment, sports, vocation and education
d. Sound film strips, acquisition	in-school, building-level materials
e. Reproduction of existing materials	hotel TV
f. Syndicated children's education programs	Distribute on our CATV systems
Planned	
a. Professional education	Medical & Law Schools
Police Training Films	Police Depts., academies
Marriage Counselling series	home TV
b. 1975-market on disc	
c. tapes, films, records, CATV and Pay TV	Entertainment, sports, vocation & education
d. cooperative venture in production	Instructional materials--video version of specialty magazines
e. coordinate with college drama and video depts.	

3. Which kinds of equipment used to provide video or film presentations do you produce and to whom will you be selling it?

Class		Type of Equipment	Consumer
0	a	Video Tape Recorder	
0	b	Video Cassette	
0	c	Super-8 Film Projector	
0	d	Cartridge	
0	e	Electronic Video Recording	
1	f	Cable Television	multiple systems operators
0	g	Pay Television	operators in theater industry
0	h	Network Broadcast	
0	i	Satellite	
0	j	Closed Circuit TV	
1	k	Microwave ITFS	
0	l	Other (specify)________	
0	m		
1	n	None	

4. What form of recording media do you use or intend to use in the production of your programs for distribution to the users? (Probe: black and white, or color?) Specifically, who will the users be for each of these recording media?

Class		Recording Media	
2	a	16 mm Film	color, sound; sound films
0	b	Super 8 Film	
0	c	Special Film	
0	d	Cartridge	
6	e	Video Tape (Magnetic)	highband color; home Pay TV; CATV; hotels
2	f	Video Cassette	
4	g	Video Disc	for dissemination
0	h	HO 70 Tape	
0	i	Slides	
0	j	Micro Fiche	
0	k		
0	l		

5. What are the comparative production costs in these media for one hour of finished program (i.e., differences in editing costs)?

a. film & videotape about equal. The big cost comes in mode of dissemination. Production costs for 1 hour can run from $50,000 to $250,000. Dissemination costs are fairly straightforward.

b. Studio costs equal: Tape is 30% cheaper than film, lasts longer, comes out better over TV; 16 mm is cheaper to copy & distribute; helical tape reduces duplication costs of tape to a par with film.

c. Video disc will cost under $10 for 1 hour, under $15 for 2 hours.

d. Better reproduction tape-to-tape than film-to-tape; tape cheaper because editing is simpler; 25% cheaper to shoot tape than film.

e. Sound filmstrips 80% cheaper than 16 mm.

f. Reproduction better on film but producing and editing cheaper on tape.

6. Given the development of optimal use of a video medium for educational presentation, do you believe that a common market would evolve in: (1) vocational school, (2) technological university, (3) home career education (4) hobbyist, (5) continuing education, (6) others?

a. home use. First will come home video cassette or disc for entertainment.

b. Vocational, technological, continuing ed. Suggest industrial market.

c. Yes, all, but I feel the "how-to" market will be bigger.

d. All, plus licensing tests, training programs, refresher courses, consumer information

e. Hobby and continuing ed. Also special education.

f. All, especially continuing ed. in (3) and (4) video must be instantly accessible.

7. Specifically, what are your present plans for providing program material for the educational market? (Probe: Do you plan on providing programs for the vocational and secondary school market?)

a. Professional education; home adult education

b. We have no money to create a market in education at this moment; our systems are not well enough developed to support that market, unless the programming were funded elsewhere than subscribers.

c. Yes, we will market programs on discs

d. Yes, shall target that market once software is developed.

e. 80% of our current productions are for educational market.

8. Can you suggest new forms of educational services to be provided?

a. Begin to offer what people need rather than what schools teach. e.g., medical, legal, consumer information.

b. Special education. Necessary elements that are unavailable through present education system. Program material will depend on money available.

c. Not now.

d. Local emphasis.

9. What factors might impede such market development?

a. Special interest groups; consumers slow to recognize need for such information; creation of a cost-effective delivery system, such as Pay TV or video-disc.

b. Engineering and cost per unit for homes of keyboards for 2-way;

c. Educators do not keep up with available material; educational material has to be for credit, as well as entertaining. Also timing in getting equipment in homes and schools.

d. Money. Problem of access--films housed in central location are hard to get to local schools. Predictions of sales by hardware manufacturers are unreliable.

e. Stupidity. Fractured vested interests in present OTA and CATV systems.

f. Traditional education process.

10. On a scale of 1-5, please indicate the relative importance of the following factors as they affect the production of quality material for the educational market?

Factors	Scale Very Important 5	4	3	2	Not at all Important 1
a. Financial investment	7	0	0	0	0
b. Regulatory	2	0	1	1	3
c. Legal	2	0	2	1	1
d. Product availability	2	1	1	0	2
e. Market development time	5	2	0	0	0
f. Fractured market	2	1	2	0	1
g. Talent	3	1	0	0	3
h. Marketing distribution	3	1	0	0	1
i. Profit potential	4	0	2	0	0
j. Competition	0	2	3	0	1
k. Organization	3	1	0	0	0
l. Delivery system confusion	2	0	0	1	2
m. Other (specify)________	0	0	0	0	0

(Total Mentions)

Please provide comments:

a. The biggest problem is that there is not really an educational market. There is virtually no way to mass market to schools. CATV is not yet ready to pay for educational programs, and commercial TV won't buy them.
b. While it would be sensible to copyright material we put on discs, the disc has an added advantage over tape in that it is not possible to pirate material from a disc.
c. A central information bank would be necessary for market distribution.
d. Most people developing programs are not aggressively marketing video or future delivery system media.
e. Regulatory: if the market is strangled by franchise rules, the production rate structure will be killed.
f. Regulatory and copyright is currently being debated.

11. Can you extrapolate as to the markets for educational programs in the near future (that is, the next two or three years), and in the long-term future (the next 10 years)?

Class	Market	2-3 years	10 years
a	Home	3 poor	5 good
b	Secondary School	3 fair, 1 good	2 fair, 2 good
c	Vocational School	2 fair, 1 good	2 fair, 2 good
d	Libraries	3 fair	4 good
e	Schools	3 poor	3 fair, 1 good
f	Public	2 poor	1 fair, 1 good
g	Special	2 poor	1 fair, 1 good
h	University	2 poor	1 fair, 1 good
i	Broadcast	2 poor	2 poor, 1 fair
j	CATV	1 poor, 2 fair	4 good
k	Record clerk		
l	Rental library	2 poor	1 fair, 1 good
m	Other (specify)		
	Satellite		1 good

Please comment:

a. 1. Schools--until schools standardize on a low cost delivery system, such as video disc, which lends itself to mass marketing & low cost preview, the school market will not change. Schools are labor intensive institutions, not willing or able to invest the capital required for the hardware and software of A-V delivery systems. They buy movie projectors & videotape recorders, but they don't spend the money to keep them supplied with software--and they don't buy enough hardware to be effective, either.

2. Home--I think video disc will open a tremendous market for instructional material for home use.

3. Libraries & Rental Libraries--should become a good market for cassette TV in 5-8 years and remain so for awhile, until the nation standardizes on a video-disc system.

4. CATV--will become a market in 1983-1985 with 2 way pay service. At that point CATV operators will be able to pay for programming.

5. Broadcast has never been a market for instructional materials, and I do not believe it will ever become one, simply because every station is independent and can only program 24 hours of material in a day. (CATV, on the other hand can program 24 hours times as many channels as the system has available.)

12. What percentage of current and prospective markets do the following consumer groups represent to your company?

Class	Definition	% Now						Future					
		a	b	c	d	e	f	a	b	c	d	e	f
a	U. S. Networks	0;	0;	0;	1;	0;	0	0;	0;	0;	1;	5;	0
b	Syndicated TV	0;	some;	0;	1;	0;	0	0;	more;	0;	1;	10;	0
c	Worldwide TV	0;	some;	0;	1;	0;	0	0;	more;	0;	1;	50;	1
d	CATV Operators	0;	35;	90;	0;	0;	100	0;	30;	25;	0;	25;	100
e	Pay TV Operators	0;	45;	0;	0;	0;	0	15;	40;	10;	0;	10;	0
f	Librarian	0;	0;	0;	7;	0;	0	0;	0;	0;	7;	10;	0
g	Audio-Visual Experts	0;	0;	0;	0;	0;	0	0;	0;	0;	0;	0;	0
h	Home-instructional	0;	0;	0;	0;	0;	0	25;	0;	0;	0;	0;	0
i	Universities	25;	0;	0;	10;	0;	0	25;	0;	10;	10;	0;	0
j	Educators	25;	0;	0;	10;	0;	0	10;	0;	10;	70;	0;	10
k	Social Agencies	40;	0;	0;	0;	0;	0	0;	0;	0;	0;	0;	0
l	Industrial/commercial	10;	0;	0;	0;	0;	0	0;	0;	0;	0;	0;	0
m	Home entertainment	0;	0;	0;	0;	0;	0	25;	10;	0;	0;	0;	0
n	Hotels	0;	0;	0;	0;	100;	0	0;	0;	0;	0;	0;	0

13. What is your percentage breakdown of typical costs associated with the production and distribution of a film to the education market?

Class	Classification	Percentage			
		a	b	c	d
a	Production Planning	2.7			0
b	Artists (original authorship and performances)	6.6			10
c	Production	16.1	most important	biggest factor	50
d	Replication & Processing	25.0	cheapest		20 add-on
e	Equipment	4.4			fixed cost
f	General & Administrative Exp.	5			
g	Marketing Distribution	11.1	highest		15-35 add-on
h	Fees (Copyright, etc.)	1.3			add-on
i	Advertising & Promotion Exp.	27.8		high	25
j					
k					

Please comment on other factors that affect the investment and financial resources

a. It is very hard to see a profit at the end of the process right now.

b. We see education as a plus factor to entertainment.

14. What problems in the educational community inhibit the purchase of program material?

a. Reluctance to spend large sums on programming; scheduling use of hardware and software; prohibitive cost of current sound-image material.

b. Stupidity--people who produce educational material don't evaluate their work.

c. Money and equipment. Learner verification--material accountability.

d. They don't know how to use equipment.

e. Immediate interest to local applications; knowledge of way to use TV.

15. What problems in the educational community inhibit the effective use of purchased program material? (PROBE: Pre-review by educators, teacher training, instructional material.)

a. Preview has to be in real-time, not skimmed. No hardware permits rapid viewing; so much bad material around. Insufficient hardware. Few teachers know good material from bad. Fewer still know how to use it effectively.

b. Title--who owns it.

c. Verification. Budgets. Costs of providing previews.

d. They don't know how to teach or what learning is.

e. Budget problems. Cable operators do not have the revenue to carry on a process of informing educators.

16. What have been your problems associated with the quality of program production? (Budget, script, performance, acquisition of materials.) (Probe: What is good material--what makes it good?)

a. Teachers cannot translate a script into images. Therefore they want all information to be explicit and verbal, and don't recognize the effect of implicit information carried visually.
b. Creativity and enough time and money to do it right. Good production values, love of what you're doing, desire to communicate the knowledge you have.
c. Use of money, spending it with creative people. Ability to have a facility to measure what is being taught.
d. Talent--finding people who can make things happen in a short time.
e. Making educational material into viewable video.

17. What percentage of your budget is allotted to experimental development (high-risk areas)? (Probe: We are interested in actual development, not in research efforts).

a. 25% but should be 10%. (We lack non-risk business at the moment.)
b. 50%
c. 1%
d. 100%

18. What factors would affect your decision to commence or increase production in high-risk areas?

a. underwriting of production costs; access to dissemination and distribution for materials; potential for high return on investment; total costs underwritten, but a small profit.
b. Success of earlier ventures.
c. Possibility of high sales volume
d. Keep risk in creative and artistic endeavors, remove risk from technology.

19. Have you received any technical, financial, or marketing support from the federal government, professional societies, or public organizations? Which organizations? How much support have you received?

Class		Agency	Technical	Financial	Marketing
2	a	HEW		$ 7,700	statistics
0	b	NET		$	
0	c	NAEB		$	
0	d	NEA		$	
1	e	EMPC		$	
1	f	NAVA		$	
				$	

Please comment:

a. Film just completed was contracted for by a state education agency using Title III ESEA funds.

b. Need broad-gauge type of knowledge which these organizations don't have. They don't understand what they need to look for.

c. It's a very young industry and involvement is still limited.

d. They have been a hindrance rather than a help.

20. Please identify the various roles you feel the Federal Government should play in stimulating the production of high quality educational TV presentation material. Which agencies do you perceive being responsible for these roles?

Class		Role	Comment (Agencies)
4	a	Financial	HEW - funds to schools & for production
2	b	Educational	
0	c	Training	
2	d	Experimental	HEW - provide funds
1	e	Legal	
0	f	Advertising	
1	g	Marketing	HEW - create a market
1	h	Organizational	
0	i	Quality Control	
1	j	Evaluation	HEW
1	k	Provide material	Armed Forces
1	l	Testing	

Additional comments:

a. Until the cost of software comes way down or someone is willing to spend millions for programming, the market will continue to be small.

b. Federal government should subsidize to inform educators on how to use TV in instruction.

21. Conversely, what specific areas should the Federal Government stay out of?

a. My bias would be to have the government stay out of the whole thing, rather than get involved in anything approaching the setting of specifications, reviewing of material, or commissionning of work.

b. Should be able to record and report, evaluate and test, but not produce.

c. Production - we can't compete with government-sponsored production that is eventually going out into the profit market.

d. Any area that would limit user access or program content.

e. Market and operator restrictions.

f. Privately-owned profit-making ventures, such as Pay TV.

22. If major production problems were financial and the Federal Government were to provide a bank system providing loans to producers of video programs, how would you envision such a system to work? (PROBE: Loans, shares, user support)

a. In a manner similar to student loans for college, say 5 years at no interest, with payback after 5 years at low interest and a portion written off each year for free play on ETV or something similar.

b. Loans at low-interest rates and long term repayment. Schools have to work on the basis that they get an economic return by using ITV.

c. Tax breaks to producers and users of educational material. Economic support will be necessary for producers if the Fair Use Clause is put into effect.

d. Same way as student loans. Should have some check on success/failure.

e. Central clearinghouse for exposure of available programs.

23. What problems have you encountered in the past as related to the legal aspects of television production such as artists fees, copyrights, syndication, etc.? Please comment.

a. Union rules in TV production make any production expensive. But most educational films can be made with a non-union crew. Screen Actors Guild has lower rates for actors in educational films.

b. Nothing is a real problem but always is a nuisance.

c. Unauthorized use of materials in schools. Educators need more complete information on what they can and can't do.

d. Union contracts. Only craft unions are willing to wait for a return on production investment.

24. What recommendations do you have for action to relieve such problems?

a. Legislation permitting local educational TV stations to buy programming from non-union independent producers.

b. None - situation isn't that bad.

c. Do not pass the Fair Use clause in current copyright revision.

d. Communication: awareness and dispersal of information.

25. Do you perceive the possibility of a different organizational structure to be created by the Federal Government such as a Video Cooperative for the purposes of producing ITV material for industry distribution? Please comment.

a. No

b. Yes, but I'm slightly worried about censorship.

c. It's premature to say right now.

d. Yes

e. Yes

26. How can such a cooperative be organized and what types of groups should participate?

a. Along the lines of N. I. T. Get students to participate in programming.

b. Would have to have a specific orientation.

c. Build or buy a studio. Let people use it at "card rate", or even sell pieces of the studio to 10 or 15 producers and lease it to others to generate profit which could go back into it. Include mobile or external production facilities.

27. What kinds of subjects do you feel will have the most universal appeal to the secondary and vocational school market?

a. Career education films showing employment opportunities; documentaries and discovery films that show how people actually live, work, play, love, get involved in things: preparation for adulthood that again stresses variety & diversify, choice and challenge.

b. Extension courses, specialized tutoring.

c. English language usage, American studies, Biology, skill-building, how-to.

d. Non-course material: sex, drugs information.

28. What kind of contact do you have, if any, with teachers or students who use your product? (Probe: Teacher training, program manuals, program evaluation) (Number of subscribers)

a. Very little except sometimes show the films to teachers.

b. We hire educational consultants who are active teachers.

c. We take materials into schools for testing in production stages, and we have continued contact with district and state curriculum coordinators.

d. Working on a project to teach Spanish.

e. None unless they initiate contact.

29. What programming format have you found to be most well received by teachers? by students? (Probe: What kind of techniques are good and have worked?)

a. Honest, direct documentary that shows a lot and says little.

b. Using materials produced by others.

c. Our best experience has been with open-ended or experimental.

30. At present, what research vehicle for determining film content needs do you have?

a. None

b. None really; sales success I guess.

c. We depend a great deal on our educational consultants.

d. Informal - feedback from field staff, curriculum experts.

e. We use the services of a market research outfit.

31. Can the Federal Government assist you through separate organizations in the development of the information you need? (Probe: Are you currently using any data provided by the Federal Government? What is it?)

a. I doubt it.

b. For home TV - census data.

c. HEW: statistics on enrollment breakdown of school districts.

d. No.

32. What do you believe to be the best form of educational delivery system?

a. A concerned teacher one-to-one with an interested student; curiosity aroused in a young learner; "Hands-on" experience with reality; a well-written book; the one-minute commercial, repeated several times; a well made film designed to interest and entertain rather than "educate".

b. CATV - Pay TV

c. CATV; over-the-air

d. Depends on kind of information delivered. Film can provide an experience that tape will never reach. Soundstrips are good for interruption and interaction.

e. Video access that allows retrieval when you want.

33. Can you describe your marketing distribution system, present and planned for educational films?

a. Present-none; our clients manage their own

Planned-produce for distribution on a royalty basis through established distributors.

b. Sales force in field, direct mail, regional library screening sessions.

c. None.

34. How might the Federal Government aid in cutting the costs of distribution?

a. I don't know.

b. Government could support user institutions so we could charge a preview fee.

c. By straight subsidization.

35. After product purchase, what is the client's prerogative regarding duplication, broadcast, re-broadcast, hard-copy, etc.? (Probe: Are these internal company policies, or are these external legal constraints?)

a. Each film is copyrighted. A purchaser may use it any way except to duplicate it, rent it, or otherwise diminish the market.

b. Specific restriction on number of times program may be shown.

c. External legalities: no showing for admission fees, no conversion or duplication, no broadcasting.

d. Customer must pay for everything that goes out over the screen.

36. Do you concentrate your production in certain subject areas? If so, what subject areas (science, humanities, career education) are your production specialty? Are you considering expansion?

a. Professional education -- teacher training, medical, legal, etc.

b. Entertainment/No.

c. Yes -- math, language arts, and social sciences. We will expand where the money and major educational emphasis is -- all tied to Federal funding for education.

d. Now: Totally fiction. Planned: non-fiction Instructional

INSTRUCTIONAL TELEVISION

USER QUESTIONNAIRE

1. INTERVIEWER ____________________

2. COMPANY NAME ____________________

3. LOCATION ____________________

4. DATE ____________________

5. PERSON INTERVIEWED: ____________________

6. RESPONSIBILITY AND TITLE ____________________

As our letter of September 7, 1973 informed you, we are performing an investigation for the United States Department of Health, Education, and Welfare on the attitudes of the users of Instructional Television programs specifically for secondary and vocational education. I would like to ask you some questions about your current and planned programs.

In order to maintain the anonymity of our respondents, under no circumstances will we release information that in any way connects the identity of an individual with responses to specific questions.

(ask faculty)

1. What are the specific forms of audio-visual systems in operation within your school system? How are they used?

Class		Type	Use
4	a	Video Tape Recorders	instructional; CCTV;TV, speech and English classes
3	b	Closed Circuit TV (CCTV)	instructional; local recording, OTA playbacks;
1	c	Public Broadcast TV	instructional; limited CCTV feed;
2	d	School studio	vocational ed.; voc. ed.; productions for class use
1	e	Cable Television (CATV)	
0	f	Video Cassette	
4	g	Films	instructional; CCTV; supplemental
0	h	Microwave (ITFS)	
1	i	Other (specify): Retrieval Systems	language lab
1	j	Records	
1	k	None	Skip to Q. 18 on faculty section

(ask faculty)

2. In terms of the number of hours of use in an average week, how large a role do audio-visual media play in the total educational program in your school?

	Class	Equipment Used	Hours per week
3	a	Video Tape Recorder	1/2; 30; 20;
2	b	CCTV	1/2; 15;
3	c	Public Broadcast TV	1/2; 5; 5;
2	d	School Studio	15; 30;
0	e	Cable Television (CATV)	
0	f	Video Cassette	
5	g	Films	6; 3; continuous; 10; 1
0	h	Microwave (ITFS)	
1	i	Other (specify): language labs	continuous
1		Record players	30

3. How do you integrate Instructional Television material into your classroom instruction: for example, do you use follow-up work, written manuals, checkpoint testing, or some other method?

	Class	Method	Use
3	a	Follow-up work	varied; group discussion on content
1	b	Written manual	limited availability;
0	c	Checkpoint Testing	
2	d	Other (specify) materials on TV itself	learning about production
		Project recordings	performance evaluation

4. How do you obtain the program material that you use?

	Class	Method
4	a	Mail Order
3	b	Telephone order/request
2	c	Automatic distribution system (via broadcast or cable)
2	d	Public library
4	e	School library
1	f	Other (specify) bookstores; newspapers; magazines

(faculty)

5 a. Do you preview the programs before you use them?

5 a. Yes
0 b. No ——> skip to Q. 6a.

5 b. Have you ever rejected programs that you previewed? On what basis?

a. Content - directed to students at different levels than ours are. Not up-to-date.
b. Yes - poor production or inappropriate subject.
c. Yes - various
d. Yes - mostly boredom
e. Yes - when subject matter does not relate to subject area or level of students

6 a. How do you select the programs that you use?

a. Preview, then order
b. Other teachers' recommendations or approval
c. On the basis of cultural or grammatical content - secondarily on the quality of production
d. Read descriptions, and recommendations of other staff members

6 b. Would you prefer to use an automatic distribution system with program selection via a keyboard or telephone-type instrument?

Yes	No	Don't Know
5	0	1

7. In terms of form and content, what deficiencies do you find in the programs that you now use?

a. Content
b. Low quality productions and telecasts due to deficiencies in broadcasting system
c. Often too general

(faculty)

8. Do you prefer programs in color or in black and white?

3 a. Color

1 b. Black and white

1 c. No preference

9. What are the reactions of your students to the use of audio-visual aids to instruction?

a. They are enthusiastic

b. Usually very well received

c. Positive

d. Quite favorable

e. They like it very well if it is up-to-date material

10. How well do students absorb the information presented by Instructional Television or other audio-visual teaching aids?

a. If program is good, very well.

b. Usually better than without them; however, they need to be of good quality

c. They seem to pick up information more efficiently than by reading

d. Much better than lecture

11. How do you measure the effectiveness of the use of Instructional Television or other audio-visual teaching aids?

a. We don't, not formally

b. General and specific feedback from students

c. Informal testing situations in groups

d. Discussion; testing; student performance

(faculty)
12. How do you use audio-visual teaching aids to vary course content and structure?

	Class	System	Method
3	a	Video Tape Recorder	To review broadcasts; to record student or teacher productions
5	b	Films	Supplementary info. ; cultural material
0	c	Video Cassettes	
3	d	Public Broadcast	As models; cultural material
0	e	CATV	
1	f	CCTV	
0	g	Other (specify)________	

13. What interaction do you have with program producers, equipment manufacturers, or distributors?

   a. With distributors, only for ordering films

   b. See all three often about new equipment and repair and maintenance problems.

   c. Limited

   d. Very little

   e. We had a very good relationship last year in producing the Industrial Education TV programs on programs at the high school level.

14. What extent of interaction between teachers and technical and creative specialists is required to produce optimal results in terms of student gain from an Instructional Television system?

   a. It is necessary throughout any program.

   b. Depends upon gain desired for a teacher-directed program; quite extensive in terms of planning, preparations. Otherwise, may be spontaneous and improvised.

   c. Maximum possible

   d. Quite a bit of interaction is necessary for teachers to fully realize the possible cases.

15. Do the producers of the Instructional Television programs you utilize provide teacher or student manuals or other educational materials to accompany the programs?

2 a. Yes

2 b. No ——————> Skip to Q. 17

16 a. Are these materials helpful to you?

Yes	No
2	0

16 b. Are they helpful to your students?

Yes	No
2	0

17. Have you ever participated in the preparation of an Instructional Television program?

a. No

b. Only on school level

c. Yes

d. No

e. Just the orientation film on Industrial Education offerings at the high school

18. Based on your experience with Instructional Television, or from what you know about it, what would you predict its potential for future use to be?

a. Tremendous, but at least ten years before we have such a program.

b. With cheaper Port-a-Pacs will come more extensive use of them, which will lead to more school-level produced programs, with more spontaneous and flexible uses.

c. Unlimited

d. Very good - as more programs are available and more teachers realize the possibilities, the use will increase greatly.

e. Has definite possibilities if appropriate material is developed in curriculum at secondary level.

(faculty)

19. Based on your experience with Instructional Television, or from what you know about it, what aspects of Instructional Television do you like?

- a. For self-improvement, especially in history and literature, I like it for my own use.
- b. Planning productions with teachers and students.
- c. Uniformity
- d. Possibility to bring in expert speakers, to show materials not readily available to all, to offer special courses.

20. Which aspects don't you like?

- a. Not able to reach to all students in a group that is extremely hetergenous.
- b. Technical-electronic
- c. Reliability
- d. Lack of intimate relationships. No time for questions. Lack of chance to discuss problem areas.
- e. Obtaining equipment for the classroom.

21. What kinds of Instructional Television programs would you most like to see produced?

- a. Character development - philosophy and psychology
- b. School-level productions
- c. This can be a tremendous tool to bring the student in contact with cultural experiences outside his immediate presence - an extension of his senses.
- d. Introductory units to certain specialized areas: computers, slide rule, use of chemical equipment, metric system, motivational presentations.
- e. Tapes made of demonstrations set in the shop, that could be used to supplement lectures and for students who miss demonstrations. Tapes would have to be in school for ready access.

22. Is there a need for improved dissemination of information about new and future audio-visual equipment?

6	a.	Yes
0	b.	No
0	c.	Don't know

(faculty)

23. Have you received any formal training in the use of audio-visual equipment or the integration of program material into classroom instruction?

2 a. Yes ("a little, not enough")

4 b. No

24. If you are a member of a professional organization or union, does that organization encourage the use of Instructional Television?

2 a. Yes

2 b. No

3 c. Don't know

25. The use of Instructional Television can substantially reduce the amount of time that teachers spend in classroom instruction. How do you (how do you plan to) make use of the extra time that the reduction of classroom responsibility will provide?

a. Preparation for future programs.- planning better follow-up activities

b. Additional classroom responsibility

c. Preparation of better materials

d. Supplement the program presented (more reading and research). Discuss problems and clarify the many questions which arise following projects, problems, etc.

e. Helping individual students

26. What classroom activities or teaching methods that you currently employ might be facilitated by the use of video programs? (PROBE: for instance, LAPS (Learning Activity Programs), field trips)

	Class	Activity	Video Substitution
4	a	LAPS	language interactions; math games
3	b	Field trips	films on geometric models, measurements
3	c	Other (specify):	
1	d	Small group discussions	Playback for sharing and evaluation
1		Presentations	i. e.: symmetry in nature; use and parts of computer; computer languages; motivational lectures

(faculty)

27. In which of the following areas do you foresee widespread use of Instructional Television?

	Class	Area
5	a	Secondary and college education
5	b	At-home education
3	c	Preschool education
3	d	Computer assisted instruction
1	e	Computer aided testing
5	f	Video tape instruction
	g	Other (specify) ________________
	h	________________

28 a. In terms of hours per week, what level of usage do you anticipate for Instructional Television in your school in the next five years? (PROBE: Levels of usage for separate subjects or disciplines)

________________ hours per week

a. None

b. Science, Industrial Arts - 2 hrs/week
All others - at least 1 hr/week

c. Varied

d. 5

e. 10

28 b. In the next 10 years?

5; same; varied; 5; 15; 2 hours per week

29. What is the student enrollment at your school? (grade level)

3700; 2,300; 5,000; 2,700; 2,800

(ask administrators)

1. What are the specific forms of audio-visual systems in operation within your school system? How are they used:

	Class	Type	Use
5	a.	Video Tape Recorders	record small group classes; color broadcast recording; B&W cameras, instructional & inservice;
5	b.	Closed Circuit TV (CCTV)	limited - few programs; broadcast into small group areas; instruct and inservice
3	c.	Public Broadcast TV	special programs; instructional and inservice
4	d.	School Studio	district studio; productions for class use; instruct and inservice
2	e	Cable Television (CATV)	wired for it - limited use
1	f	Video Cassette	
6	g	Films	many films used; supplementary instructional and inservice
0	h	Microwave (ITFS)	
1	i	Other (specify): audio cassette	
	j	None	

2. What new or additional audio-visual equipment or system does your school plan to acquire in the next five years? In the next ten years?

	Class	System	Next 5 years	Next 10 years
1	a	Video Tape Recorders		
2	b	CCTV		
1	c	Television Sets	5	10
0	d	School studio		
1	e	CATV		
2	f	Video Cassettes		
2	g	Film		
0	h	Microwave (ITFS)		
1	i	Videotape	75	100
0	j	Other (specify) Audio cassette		

(administrators)

3. In terms of hours per week, what are the current usage levels for the Instructional Television or other audio-visual systems in your school? What do you think the usage levels will be five years from now? Ten years from now?

	Class	System	Present	5 yrs	10 yrs	
4	a	Video Tape Recorders	20; 30; 1/2; 5	40; 2; 10	2; 20	hrs
3	b	CCTV	15; 1/2; 3;	40; 1; 10	1; 20	
3	c	Television Sets	30; 1/2; 5;	40; 1; 10	1; 10	per
2	d	School studio	30; 15	40; 20	25	wk
1	e	CATV	2	10	20	
0	f	Video Cassettes				
6	g	Film	10; 6: 3; 6; 1; continuous;	4; 10	4; 20	
0	h	Microwave (ITFS)				
3	i	Videotape	continuous; 1/2; 5;	2; 10	2	
1	j	Other (specify) Public Broadcast	5			
1		Record player, language and reading labs in constant use				

4. Would your school consider utilizing video systems for:

	Class	Area
3	a	Teacher training (PROBE: How?) a. For self-improvement programs and maybe evaluation. b. For intensive inservice training session in subject areas and in general human interaction work.
3	b	Exchange of information with other schools or school systems
3	c	Redistribution of open circuit TV programs over additional channels at various times
2	d	Computerized access of information, data, videotapes, films
3	e	Adult education, high school equivalency, college equivalency, vocational training, at-home training

(list continued on following page)

Q 4. (continued)

	Class	Area
1	f	Two-way communications between the place of program origination and the user
2	g	Exchange of information with libraries and museums in your community
2	h	Reaching teachers, students, or parents in the home

5. What is the title of the person responsible for determining the extent to which Instructional Television or other audio-visual systems will be used in your school?

   a. Supervisor of media services

   b. Media Coordinator

   c. Direction of Instructional Materials Center

6 a. What is your annual budget allocation for specific audio-visual equipment or systems? What proportion of your total annual budget does that figure represent?

Class	Equipment	Budget	% of Total
a	Video Tape Recorders		
b	CCTV		
c	Television sets		
d	School Studio		
e	CATV		
f	Video Cassettes		
g	Film		
h	Microwave (ITFS)		
i	Videotape	$500	70%
j	Other (specify) ________		

a. Most of above already purchased before 1968. Repair and maintenance only 2%.

b. Total District Budget for capital, A-V equipment:

1969 - $115,000
1970 - $70,000
1971 - $ 50,000
1972 - None
1973 - $20,000

(administrators)

6 b. How are these figures different from your budget for audio-visual equipment last year? 5 years ago?

Class	Equipment	Budget		% of Total	
		1972	1968	1972	1968
a	Video Tape Recorders		lower		
b	CCTV		"		
c	Television sets		"		
d	School studio		"		
e	CATV		"		
f	Video Cassettes		"		
g	Film		"		
h	Microwave (ITFS)		"		
i	Video tape		"		
j	Other (specify) ________		"		

6 c. What will be your annual budget for specific audio-visual equipment five years from now, and what proportion of the total annual budget will it represent? 10 years from now?

Class	Equipment	Budget		% of Total	
		1978	1983	1978	1983
a	Video Tape Recorders		$4000		2%
b	CCTV				
c	Television sets		$1000		70%
d	School studio				
e	CATV				
f	Video Cassettes				
g	Film				
h	Microwave (ITFS)				
i	Video tape	$500	$ 500		70%
j	Other (specify) ________				

a. We anticipate very little to none in way of capital allotted to this area in next 3 - 5 years.

(administrators)

7. Which is the more serious impediment to the use of Instructional Television in your school, insufficient financial or technical resources?

2 a. Financial
0 b. Technical
1 c. Both equally serious
0 d. Other (specify)

8. Which of these factors significantly influence any decision to expand your existing video equipment or to purchase new equipment systems? (PROBE: which are most important?)

	Class	Factor	Comment
1	a	Teacher favorability #1	
0	b	Student interest	
3	c	Budget #2, #1	
0	d	Equipment in other schools in your district	
2	e	Program cost	
0	f	Program content	
0	g	Program availability	
0	h	CATV franchise in your community	
3	i	Cost of equipment	
1	j	Reliability of equipment	
1	k	Availability of equipment that will not become obsolete	
0	l	Pressure from parents or the community	
0	m	Other (specify)________	

a. Great interest in all areas but financial problems too great to expand.

(administrators)

9. If the price of programs were 5-10% less, how would this affect your budget for program acquisition: would your annual budget remain the same, would it increase, or would it decrease? 15-25% less? 50% less?

		5-10%	15-25%	50%
1	a. Remain the same			
1	b. Increase			
0	c. Decrease			
0	d. Don't know			

10. Is there a need for improved dissemination of information about new and future Instructional Television equipment?

3 a. Yes
0 b. No
0 c. Don't know

11. In which of these areas do you anticipate widespread use of Instructional Television?

	Class	Area
5	a	Secondary and college education
5	b	At-home education
3	c	Preschool education
2	d	Computer assisted instruction
0	e	Computer aided testing
5	f	Videotape instruction
0	g	Other (specify)__________
	h	__________

12. As an administrator, how do you measure the effectiveness of the use of Instructional Television (PROBE: a measurement index such as cost/benefit for students)?

a. Not done;
b. Cost/benefit analysis
c. Teacher usage chart, equipment check-out, student questionnaires

(administrators)

13 a. Does your school have a film or video tape library? Does it have access to one? Does it have plans to acquire one?

3 a. Yes
b. No
c. Don't know → skip to Q. 14

13 b. What is the size of the library? How is it staffed?

a. 350 Films
100 VTRs part time
b. Small, teacher-staffed
c. Instructional Materials Center in Central Administrative Bldg.

14. The following are some inputs for implementation of Instructional Television in a school system. Who do you think should be responsible for providing each of these inputs:

Class	Input	Responsibility
a	Professional Leadership	Teacher
b	Supporting staff (teachers, studio technicians, TV teachers, graphic artists)	Teacher
c	In-service workshops for teachers	University in cooperation w/teachers
d	Receiving equipment and distribution systems within the school	Administration
e	Studio	Teachers w/aides
f	Programming	Teachers

15. What is the student enrollment at your school?

2,700; 5,000; 2,300; 2,800

(ITV specialist)

1. What are the specific forms of TV systems in operation within your school system? How are they used?

	Class	Type	Use
5	a	Video Tape Recorders	Library of 450 hours - video tape programs
4	b	Closed Circuit TV (CCTV)	3 systems for 11 schools, use Bell cable
4	c	Public Broadcast TV	Instructional enrichment
2	d	School Studio	Student, staff productions
1	e	Cable Television (CATV)	
--	f	Video Cassette	
4	g	Films	Academic; county distribution center for media material
1	h	Microwave (ITFS)	
1	i	Other (specify) reel-to-reel and cassette: audio tape	
	j		
	k	None	

2. How integrally is ITV utilized in classroom instruction?

   a. More teachers are including ITV as a planned part of their courses. Inservice training for elementary social studies; health and physical education departments will be using 2 video series.

   b. Self-evaluation for speeches, lectures. Learning resources in academic programs.

3. What is your interaction, if any, with members of the faculty and administration in the coordination of curriculum development?

   a. Extensive, but always self-initiated.

   b. Work through curriculum committee - we have the role of educating teachers and administration in use of ITV, and work with them on curriculum, but we are fairly autonomous when it comes to software design and production.

   c. Limited connection - I coordinate software and materials for the library.

   d. Producer-instructor works directly with faculty to develop classroom material.

   e. New curriculum coordinating committee forming; I will be on it.

142A

(ITV specialist)

4. Can you provide an estimate of the average number of hours per week the various types of ITV equipment currently in operation at your school are used in classroom instruction?

	Class	Type	Average hours/week
2	a	Video Tape Recorders	12 - 15 hours; 10 - 20 hours;
2	b	Closed Circuit TV (CCTV)	4 out of 7 periods each day; 1 - 3 hours
2	c	Public Broadcast TV	3 - 5 hours
0	d	School Studio	
2	e	Cable Television (CATV)	12 - 15 hours; 3 - 5 hours
0	f	Video Cassette	
0	g	Films	
0	h	Microwave (ITFS)	
1	i	Other (specify)	6 hours for all A-V material

5. In what manner and to what extent do the separate departments utilize the available ITV facilities (be specific)

	Department	Usage
1	Mathematics	Limited; usually self-evaluation
2	Sciences	Moderate supplementary use
3	Social Sciences	Extensive supplementary and enrichment use
4	English	Extensive supplementary and enrichment use
0	Foreign Languages	No use
0	Career or Vocational Education	No use
1	Other (specify)	Art appreciation classes
2		Health and physical education classes
2		Morning announcements

6. What ITV equipment do you plan to acquire in the next five years? In the next ten years?

   a. No new prototype equipment until use is established; facility for a new high school studio is planned, will be more of a distribution facility. We will offer studio as a career ed. course in high school, so there will be a large studio, a production control room, distribution room, and a stage that can serve as another studio.

   b. New studio in 3 years; more VTRs, new console, cameras, film chain, multiplexer, cassette recorder.

   c. VTRs, headend installation, a school studio.

7. Which do you consider more effective for ITV presentation: color or black and white? Which do you use now?

	More Effective		In Use Now
2	a. Color	0	a. Color
0	b. Black and white	4	b. Black and white
0	c. No preference	0	c. Both

8. What equipment improvement would most affect the ITV presentation?

0 a. Higher picture resolution
0 b. Brighter color
1 c. Better synchronization stability
d. Other (be specific) Equipment dependability; Eliminate vulnerability to people problems - dirt, breakage

9. What size monitors do you use in your ITV presentations?

a. 24"
b. 20 - 24"
c. 23"
d. 25"

(ITV specialist)

10. What do you consider the ideal monitor-to-student and teacher-to-student ratios for televised instruction purposes? What are the actual ratios in your school district?

ratio	ideal				actual		
	a	b	c	d	a	b	c
monitor/student	1/12	1/20	1/30	1/25*	1/25	1/25	1/70
teacher/student	1/30	1/30	1/25	--	1/25	1/20	--

* plus smaller monitors for individual use

11. What method do you use to obtain your program material?

	Class	Method
2	a	Mail order
0	b	Telephone order (request)
2	c	Automatic distribution system (via broadcast or cable)
0	d	Public library
1	e	School library
5	f	Other (specify) tape off-the-air for playback
3		produce own

12. In what areas do you find available programming to be insufficient? Lacking in quality? N. B. - respondents answered only to "insufficient."

a. Vo-Tech: tool and die, machine shop, plumbing, sheet metal, commercial sewing.

b. Mathematics

c. Administration; guidelines or curriculum

d. Programs used in individual packages and sold as such, for open-space type schools

13. What type of programs would you like most to see produced?

a. Career ed.; teacher training in learning disabilities; staff development, evaluation, and demonstration.

b. Specialized information that ordinary teachers wouldn't have the background for; curriculum-oriented; attitudinal (affective).

c. Filmstrips and slide presentations in commercial areas

d. Short, color enrichment programming by professional production units (à la National Geographic or Xerox).

e. Individualized instruction.

14. Do you have facilities to produce hard (paper) copies of material that appears in any of the programs you use?

No	Yes
(3)	(1)

15. Are manuals available from your program source for teacher or student use suggesting materials and activities that would optimize the use of each ITV program? If so, please comment on their usage.

a. Yes - they are almost always used

b. Not for inhouse productions. Receive teachers guides from WNET.

c. Yes, from TriState and New Jersey Public Broadcasting

16. How extensively are the teachers at your school trained in ITV teaching and operational techniques? Do students operate ITV equipment?

a. In our role as trainers, we work with specific curricula groups, and find this more effective than arbitrary inservice workshops.

b. Some of the teachers in our academic group have been trained; we try to encourage those who feel positive about A-V to continue using it.

c. Inservice workshops once-a-year. Yes, students operate equipment.

d. Our inservice summer program in TV production is in its 3rd year. We hold a 5-week workshop to teach in-depth production. About 50% of the staff is trained. At least 50% of this year's programs are produced in the classroom with student participation in production.

17. What do you consider the optimal combination of interactive (2-way) and passive (1-way) ITV instruction?

a. Mostly 2-way

b. In order to create convenience to users, have active response to service. Not interactive during program, but for call-up access and feedback.

18. In practice approximately what percentage of ITV instruction in your school is interactive and what percentage passive?

(No mentions) % interactive 100 % passive (5 mentions)

Please comment

a. I would question the value of interactive in terms of our application sphere of supplementing, making a convenience for the teacher and freeing the teacher to take a more humanistic role.

19. How effective do you consider the ITV program in your school to be?

a. Good. For 2 reasons: we have had superior technical staff (it is essential to have someone who really understands the medium) and our director has had a teaching background, so he can work in necessary administrative channels and emphasize utilization to other faculty.

b. Very effective. We are branching into all areas and we're concentrating on A-V. The problem in vocational areas is quality software.

c. For the students it's great, for the teachers it stinks. We need more money and more concern. Teachers use the programming in a limited way, but students greatly benefit from the experience of having equipment and learning from it.

(ITV specialist)

20. What measures are employed or what standards are used to test the effectiveness of ITV program usage? (PROBE: is there a cost/student benefit?)

a. None, ITV use is strictly supplementary at this point.

b. None

c. It's up to individual teachers; we have dollar information only on the quantity of programs used.

21. What factors do you feel inhibit the optimal effectiveness of ITV/ETV in your school? In general?

a. Problems getting talent and research. Everyone is so completely pay-oriented. Also scheduling. We use only one cable channel and need more channels or decoders for additional flexibility.

b. Teacher acceptance of media.

c. Money and staffing. I don't have time to solicit Federal funding. Inflexible discipline in schools, teacher resistance. A successful program must meet changing needs and offer convenience to users.

d. Scheduling. A small number of teachers won't use it (about 10%). Difficulties in communicating to staff and students. Level of teacher training. TV is currently more sophisticated than the education process.

22 a. What is your annual budget allocation for specific audio-visual equipment or systems? What proportion of your total annual budget does that figure represent?

Class	Equipment	Budget				% of Total
		a	b	c	d	e
a	Video Tape Recorders					
b	CCTV					$3,000
c	Television sets					$5,000
d	School Studio					$ 500
e	CATV					
f	Video Cassettes					
g	Film					
h	Microwave (ITFS)					
i	Videotape	$100				100 tapes
j	Other (specify)________					
	Total A-V Budgets:	$100	$10,000	50% of library budget	$2,500	$11,000

22 b. How are these figures different from your budget for audio-visual equipment last year? 5 years ago?

Class	Equipment	Budget		% of Total
		1972	1968	1968
a	Video Tape Recorders			
b	CCTV			
c	Television sets			
d	School Studio			
e	CATV			
f	Video Cassettes			
g	Film			
h	Microwave (ITFS)			
i	Video tape			
j	Other (specify) ________			

		a	b	c	d
Overall Budget	1968	$10,000	$500,000	has increased each year	no difference
	1972	$ 100	$ 10,000		

22 c. What will be your annual budget for specific audio-visual equipment five years from now, and what proportion of the total annual budget will it represent? 10 years from now?

Class	Equipment	Budget		% of Total
		1978	1983	1983
a	Video Tape Recorders			
b	CCTV			
c	Television sets			
d	School studio			
e	CATV			
f	Video Cassettes			
g	Film			
h	Microwave (ITFS)			
i	Video tape			
j	Other (specify) ________			

a. We have had a slight increase each year; there is no sign that this will cease.

b. Will continue at 50% of library budget.

c. Can't tell. TV is not a big priority, and our entire budget is tight.

(ITV specialist)

23. Is your school district interested in the use of ITV/ETV for reaching students, parents, or teachers in the home? Please comment.

2 a. Yes — a. We cablecast preschool instruction, as well as school board meetings

1 b. No

0 c. I don't know — b. We will work with CATV or UHF to home if they come in.

24. Is your school district interested in keyboard or telephone activated automatic information distribution systems? (PROBE: what types?)

0 a. Yes

2 b. No

0 c. I don't know

25. Is there an existing or prospective CATV franchise in your area? How do you expect to implement the FCC provisions for free use of the channels in the CATV contract?

a. Yes. We have on occasion cablecast a program but this is rare.

b. No

c. Yes. We are making full use of one channel

26. Would the use of CATV expand or duplicate present audio-visual equipment used in your school? Please comment.

1 a. Expand

0 b. Duplicate

27. Since local origination may be required of CATV operations, would your school district be interested in joint production ventures with neighboring colleges, universities, or vocational schools?

1 a. Yes

0 b. No

0 c. I don't know

28. Does your school presently operate an ITV system that includes production facilities? (PROBE: what kind, how extensive?)

3 a. Yes 1" tape VTRs; we produce 1/3 to 1/2 of the material used; VTRs, one VTR

0 b. No

29. Have you ever had experience producing ITV programs? Please describe.

3 a. Yes Make programs at request of faculty, cablecast school board meetings; work with students on production; attended a workshop at Educational Improvement Center

0 b. No

30 If you are a member of a professional organization or union, does that organization encourage the use of ITV/ETV?

1 a. Yes __________ Name of Organization NAEB

1 b. No

0 c. I don't know

30 b. Why do you think use of ITV is (encouraged/discouraged)? How do you feel about it?

a. National Association of Educational Broadcasters is a vested interest group.

31. Is there a need for improved dissemination of information about new and future audio-visual equipment?

4 a. Yes ________________

0 b. No ________________

0 c. I don't know ________________

a. Especially to let people know how to incorporate media into classroom.

b. Include some standard of quality

32. What is the student enrollment at your school?

a. 15,000/district

b. 11,000

c. 2,600